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FISHES OF THE FAMILIES

BLENNIIDAE AND SALARIIDAE

OF THE

WESTERN INDIAN OCEAN

By

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Illustrations by Margaret M. Smith.

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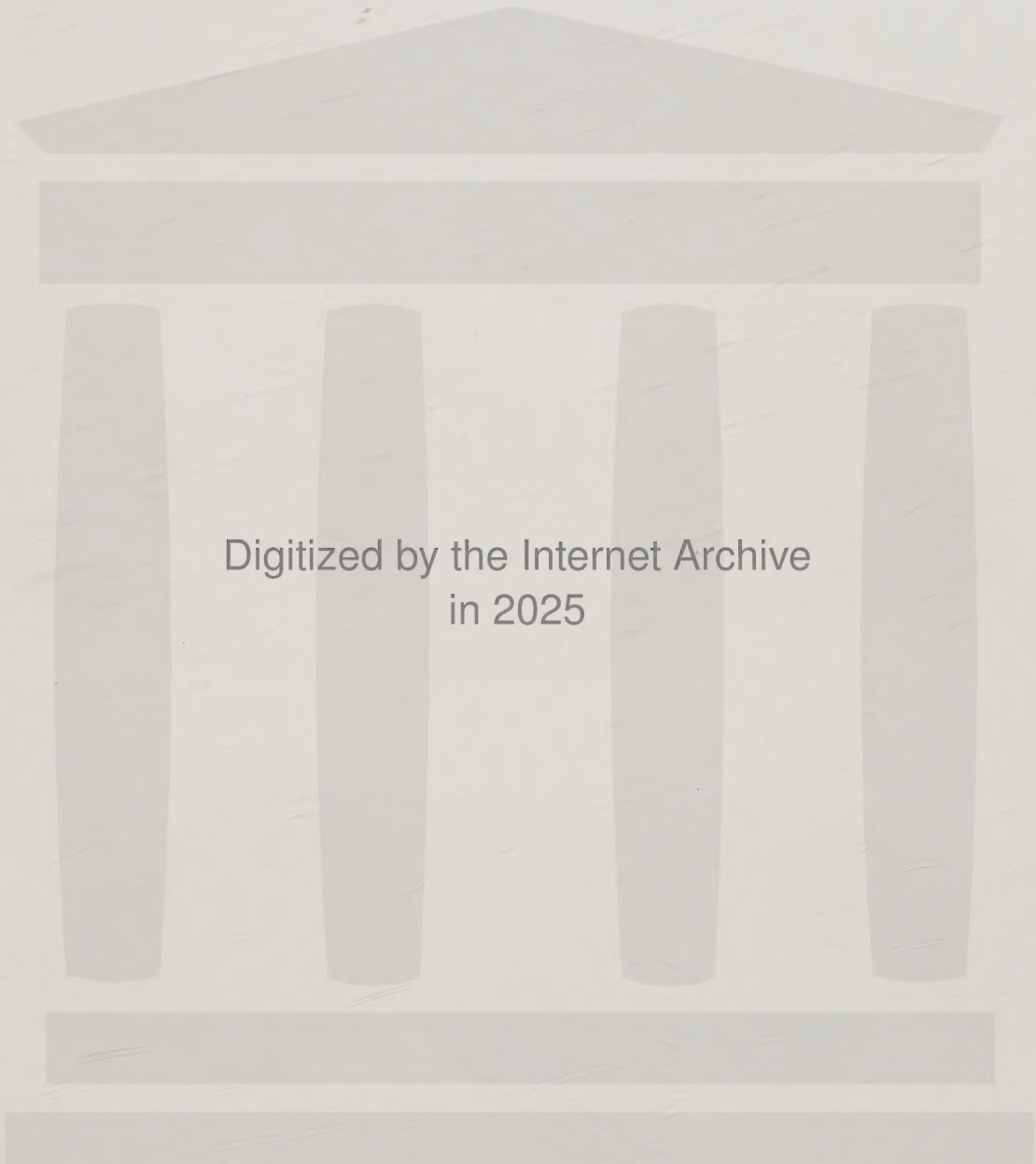

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PLATE 15

1. *Salarias fasciatus* (Bloch). 115mm. 2. *Antennablennius Litanchus velifer n. sp.*, type, male, 76mm. 3. *Salarias sinuosus indicus nov*, type, male, 62mm; below, left ocular cirrus.

Fishes of the Families Blenniidae and Salariidae

OF THE WESTERN INDIAN OCEAN

(With Plates 14 - 18)

by J. L. B. SMITH,

Research Professor and South African Council for Scientific and Industrial Research Fellow in Ichthyology, Rhodes University, Grahamstown.

Blennioid fishes of the families Blenniidae and Salariidae are found in almost all seas. They are small, agile fishes of shallow water, most being intertidal. The body is normally naked, elongate; the pectoral and vertical fins well developed; the pelvics mostly reduced, the rays hidden in thick tissue, used as limbs for support of the body. Many species freely leave the water and are as agile as grasshoppers on land. I have found them virtually unaffected by underwater explosions, e.g. detonators, even close by, possibly because they have no air bladder. While some are sombre, many of these fishes are brilliantly coloured, those living in weed showing wide variation in colour on a basically similar pattern. While more abundant than in most tropical areas, none are of economic significance in the W. Indian Ocean. 67 species are described. All new species, and all others possible, including sexual dimorphs, have been figured, 24 in colour, and 53 monochrome illustrations, total 77. In the case of 4 species, neither specimens nor illustrations could be obtained. The locality from which each specimen illustrated came is given in each case.

The Salariidae are commonly given only subfamily rank in the Blenniidae, and indeed there is a degree of intergrading but, not only is there constant difference in the dentition, their habits also support full family distinction, which may be defined as follows:

A. Premaxilla with well developed pedicel, no bony ridge above upper lip. Teeth always firm. Gillopening wide, to restricted in tropical species ..... **Blenniidae**

B. Premaxilla with feeble pedicel, a bony ridge forms groove for upper lip. Teeth mostly in lips, almost hairlike, movable. Gillopening always unrestricted ..... **Salariidae**

NOTE: Unless otherwise noted, types are in this Department.
Gillrakers stated are those on whole arch.

Family **BLENNIIDAE**

Most species occur in temperate seas, and are primarily carnivorous. They live mostly in shallow pools, sheltering in weed and sand, only a few leave the water. The majority of the Blenniid fishes of the W. Indian Ocean have restricted gillopenings, and so fall in the sub-family Petroscirtinae. Of the 13 genera here listed, all but **Blennius** Linn, might be put in the Petroscirtinae, but **Hypsoblennius** Gill, and **Enchelyurus** Peters, are in some ways intermediate, and, despite the restriction of the gillopening, fall more properly in the Blenniinae. No separation into subfamilies is attempted here.

The Blenniidae of the W. Indian Ocean fall in 13 genera, one new. Of the 27 species accepted here, 5 are described as new, one as a new subspecies, 9, as far as known, are endemic in the W. Indian Ocean. In addition, 5 species of doubtful identity, that have been recorded, are listed below.

A. Gillopening wide, membranes form fold across throat ..... 1. **Blennius**

B. Gillopenings restricted, lateral only:

I. Body not eelshaped. Not more than 40 A rays:

(a) Gillopening almost entirely above P base, less than eye:

1. I-orb less than eye:

x. Cirrus at eye. Skinny flaps on chin. Lower canines large. V I 3 ..... 2. **Petroscirtes**

y. No cirrus at eye. Lower canines moderate. V I 2:

i. Large bifid cirrus at each nostril. Ciliate flap each side lower lip ..... 3. **Laiphognathus**

ii. No marked bifid nasal cirri or ciliate flap on lip ..... 4. **Omobranchus**

2. I-orb not less than eye. Lower canines large:

x. 4-8 D spines. Snout blunt, less than eye ..... 5. **Meiacanthus**

y. 11 or more D spines. Snout sloping, not less than eye ..... 6. **Dasson**

(b) Lower edge gillopening opposite P base. No cirrus above eye:

1. Lower canines less than eye, little larger than upper:

x. D & A united with caudal ..... 7. **Enchelyurus**

y. D & A free from caudal ..... 8. **Cruantus nov.**

2. Lower canines large, upper if present much smaller :
x. More than 40 lower teeth, much smaller than upper.
No upper canines. P 12(-13) ..... 9. **Runula**
y. Upper and lower front teeth subequal, less than 40 in each jaw.
P (13-)14. Small upper canines ..... 10. **Aspidontus**
(c) Gillopening to lower edge P base :
1. Front D spines form crest. Cirri on chin, none at eye ..... 11. **Blennechis**
2. No D crest, no cirri on chin, cirrus at eye ..... 12. **Hypsoblennius**
II. Body eelshaped. 100 or more A rays ..... 13. **Xiphasia**

1. **Blennius** Linn, 1758.

Type **B. ocellaris** Linn, 1758. Gillmembers free from isthmus, form fold across throat. Less than 40 fixed teeth in each jaw, canines often present, upper and lower subequal. No crest. Front of lower jaw rounded. Cirri at eye, sometimes median on nape. Numerous species, most in temperate seas.

A. Cirri on nape ..... **steindachneri**
B. No cirri on nape :
I. Large nuchal crest ..... **pavo**
II. No crest :
a. D total 26-27 ..... **lodosus n. sp.**
b. D total 29-31 ..... **cyclops**

BLENNIUS STEINDACHNERI Day 1873 (**Pl 14, J,** male. 31°S.). **Blennius cristatus (non** Linn) Smith 1949, 343, Pl 76, f 950. D XI-XII 14-16. A II 16-18. P 14. V I 3. About 10 small rakers on lower part of arch. Depth equals head, about 3½ in body. Eye 3½-4 in head, twice I-orb. Nasal cirrus with 5-7 cilia, less than pupil, that above eye ½ eye with 7-10 cilia. PreD skinny ridge with 6-12 cilia usually less than eye, in large males some exceed eye. L.1. 14-15 double pores in front, almost reaches Cd base. Mouth variably below eye, small blunt lower canine. In males, D origin close behind eye, 1st fin as high as 2nd, ½ body depth, moderate notch, both fins rounded. Females, D origin behind preopercle margin, 1st fin lower than 2nd. A lower than D, spines in males strongly dendritic, last D & A ray joined to body. Ground colour yellowish, 7-8 brown cross bars and many red-brown fine spots over whole body, blue ocellus 1-2 D spines, vertical fins spotted, 4-5 rows larger spots across Cd. Preserved: alcohol, much as in life, cross bars visible; formalin; bars faded, body spotted, none on head. Many specimens to 100 mm., mainly Delagoa Bay, males greatly outnumber females, sexes differ, females with more sloping snout and D origin further from eye. Little doubt that this falls with **steindachneri** Day, from India; Day 1876, Pl 70, f 1, shows female.

BLENNIUS PAVO Risso, 1810 (**Pl 14, K**). Gruvel 1936, 173. Tortonese 1948, 285 (Suez.). Not seen. D XII 21-22. A 24-25. Strong lower canine, upper smaller. Male with crest, small cirrus at eye. No D notch, joined to Cd. Mainly brown-green, blue stripes on front of body, black and blue spots behind, dark blue band from crest through eye, 3 angular bands on throat, bar over P base, black ocellus behind eye. A Mediterranean species that has got to Suez. Valenciennes 1836, 238, Pl 323 (copied in Pl 14), shows D XIII 21, A II 23, P 10, V I 2 and simple cirrus at eye, equals eye.

Blennius lodosus n. sp.

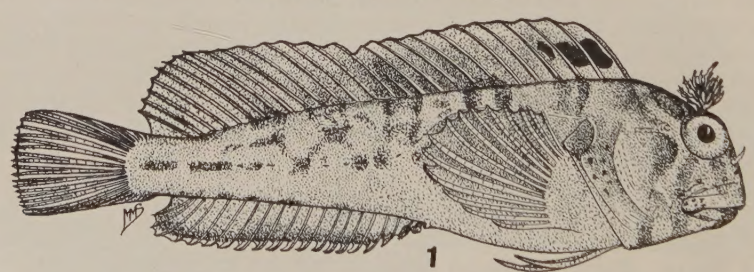

Fig. 1. **Blennius lodosus n. sp.** Type, male, 39 mm.

D XII 14-15. A II 17-18. P 14-15. V I 3. 7-8 apically bispinate rakers. Depth equals head, 3½ in body. Eye 4 in head, 4 times I-orb. Many papillae on head and nape. Snout almost vertical, muzzle protrudes. Simple nasal cirrus, broad fleshy cirrus at eye, exceeds eye, 6-13 cilia. With age in males nape slightly gibbous, with low median preD skinny ridge. Mouth to below mid eye, lower canine each side, ½ eye in males, less in females, smaller upper canines. Palate edentate. L.1. little curved, 9-10 double pores, bends below 9th D spine, runs on mid side as pores almost to Cd base. Front D spines little higher, last small, no true notch, soft fin higher behind, 8-11th rays longest, higher than 1st D. A spines in male swollen, last D & A rays bound to body before Cd base. P to or near A origin. Pelvic 1.4 in head, reach half-way to anus. Cd rounded. Alive: drab, brownish, body spotted darker, 5-6 vague crossbars, extend to base of D. Between 1-2nd D spines large black ocellus, more vivid in males, fainter one 2-3rd spines. Fins dusky, A with wide dark submarginal band, vague in females, tips of rays light. 22-40 mm., ripe females at 30 mm.

Delagoa Bay only, muddy areas. Type, male, 39 mm. In combination of characters differs from all others known from S.E. Africa.

BLENNIUS CYCLOPS (Ruppell) 1828 (**Pl 14, H**). **Salarias cyclops** Ruppell 1828, 113, Pl 28, f 3; Gunther 1861, 246. **Blennius semifasciatus** Ruppell 1835, 134; Gunther 1861, 214. **Blennius cyclops** Klunzinger 1871, 494; **var guttatus** Kossman & Rauber 1877, 21. Not seen. D 29. A 20. P 14. V I 2. Depth equals head, 4½ in body. Snout blunt. Simple nasal cirrus, one at eye multifid. L.l. in front only. Canine in each jaw. D uniform, no notch, last ray joined to Cd base, last A ray free, A spines dendritic (male). Cd truncate. Yellow brown, dark spots on front part, vague darker cross bars, fins yellowish, ocellus at front of D. 65 mm. Red Sea only. Ruppell's 1828, Pl 28, f 3 shows D 31, A II 19, P 13 and nasal cirrus bifid. Klunzinger 1871, 494, examined the types of **cyclops** and **semifasciatus** and states them as identical and to fall in **Blennius** Linn.

2. **Petroscirtes** Ruppell, 1828.

Type **P. mitratus** Ruppell, 1828. Body depth 3-5. Gillopening small, above P base. Upper canines much smaller than lower. Interorbital less than eye. Skinny flap at eye, others on head. D XI-XII 13-15, at least one front spine elongate. A II 14-17, spines apically swollen in males. The type, and a **n. sp.** in our area.

A. Depth 3-4. 3 front spines form crest ..... **mitratus**
B. Depth 6. One front spine elevated ..... **pindae n. sp.**

PETROSCIRTES MITRATUS Ruppell, 1828 (**Pl 19, M.** fem. N. Mozam.). **P. mitratus** Ruppell 1828, 111, Pl 28, f 1 (Red Sea). Smith 1949, 345, Pl 74, fs 959, M & F (Moz.): also as: **barbatus** Peters, 1855; **marmoratus** Bleeker, 1878; and **lienardi** Day, 1876, many records over whole area. D XI 14-15. A II 14-15. P 15 (rarely 14). V I 3. C 11. 10 gillrakers. Marked sexual dimorphism. Depth 3½-4, head 3½ in body. Eye 3 in head, 1½-2 times concave I-orb. Cirrus above eye variably plain, flat to wide, ciliate. Flaps behind eye, on nape, over opercle, along lower preopercle margin, chin 2 large flaps, lesser one at side. Small simple nasal cirrus. Gillopening less than eye, above P base. 25-30 upper teeth, rounded tips, 30-35 lower, more acute. Upper canine ½-⅔ of lower, sometimes 2 above, hinder smaller. Lower lip with small flap at side below upper canine. 1st 2 D spines longest, close together, with 3rd form crest, exceeds head in males, less in females, notch behind crest variable, height to less than ⅓ length of crest in males, whose 1st two A spines have apical pads. Last D and A ray joined to body, not to Cd. P not to A origin. 2nd pelvic ray longest, in males to or near A origin, with wide flap on distal half, deep cleft between 1st and 2nd ray. Cd rounded to truncate, rarely 1 upper ray extended. L.l. of simple tubes, up to D, runs along base, ends below 1-3rd soft ray. Alive, mottled, marbled and spotted in pastel shades (Smith 1949, Pl 72). To 90 mm., mostly less, from 30°S in E. Africa over whole W. Ind. Ocean, mainly weedy areas. **P. lienardi** Day 1878 (327, Pl 69, f 8) is recorded from Seychelles, the text states D 3-10-17, whereas his fig. (35 mm. fish) shows D 26, and agrees exactly with my fishes of that size.

Petroscirtes pindae n. sp. (Pl 17, f 4).

D XI 15. A II 15. P 13. V I 3. Depth 6, head 4 in body. Eye 3.6 in head, twice concave I-orb. Flat simple cirrus at eye, plain flaps behind eye, at nape, and above opercle. Multifid flaps on chin and lower preopercle margin. Small simple nasal cirrus. Eye covered by skin, pupil irregularly bean-shaped. Gillopening less than eye, above P base. L.l. of small isolated tubes, 3 to base of 4th D spine, 5 along D base, last down, below base of 10th spine. About 25 lower teeth, 30 upper. Lower canines ⅔ eye, upper barely ⅓ lower. 2nd D spine elongate, exceeds body depth, upper Cd ray exceeds head. 2nd A ray swollen apically. Other dimensions and data as in Pl 17, as also live colour, delicate pastel shades. Preserved, light, uniform, belly dusky, dark marks on vertical fins as in Pl 17. Only the type, 47 mm., including filament, Pinda, coral pool. Appears clearly distinct from all other known species, related to **P. xestus** Jordan & Seale, 1906, from Samoa, only 2 specimens, 14 mm. length, having depth 2.75; D 26, A 17, and 3 spots on D, but interorbital said to equal eye.

3. **Laiphognathus** Smith, 1955.

Type **L. multimaculatus** Smith, 1955. Gillopening entirely above P base. Upper canines little smaller than lower, lower lip with ciliate flap at side. No crest, bifid cirri at each nostril. V I 2. D & A free from Cd. Close to **Omobranchus** Val., differs in nasal cilia, and ciliate labial flap.

LAIPHOGNATHUS MULTIMACULATUS Smith 1955, 24, f 29 (**Pl 17, f 2**). D XI 20-21. A II 20. P 13. V I 2. Depth 6, head 5 in body. Eye 5 in head, 5 times I-orb. 20 lower and 22 upper teeth. Lower canines little longer than upper. Ciliate flap each side lower jaw. Gillopening small, above P base. Prominent bifid cirri at each nostril, upper close to eye. L.l. feeble, only 3 tubules at origin. Alive, as Pl 17, preserved, light, with dark spots as shown. The type, 45 mm., Bazaruto, one 30 mm., Pemba. Earlier stated to have cirri on eye, but upper is at nostril.

4. **Omobranchus** Valenciennes, 1836.

Type **Blennechis fasciolatus** Val., 1836 (= **punctatus** Val., 1836). Gillopening entirely above P base. Upper canines little smaller than lower. Snout blunt. Crest may be present, no cirri. D & A free from Cd. Many species, probably 5 in our area.

A. Distinct flap-like crest in males at least :
  I. Crest low. Dark spot behind eye :
    a. Strong dark cross bars in pairs ..... **striatus**

b. Spots and narrow lines across body ..... **mekranensis**
II. Crest high in males. Dark spot above gillopening ..... **banditus nov.**
B. No real crest in either sex :
I. Angular cross bars or spots. Usually dark blotch on 2nd D ..... **elongatus**
II. Bars across cheek and body — stripes along front of body ..... **japonicus scalatus nov.**

OMOBRANCHUS STRIATUS (Jatzow & Lenz), 1898 (**Pl 18, G**). **Petroscirtes striatus** Jatzow & Lenz 1898, 512, Pl 35, f 9 (Zanz.). Not seen. D XII 19. A 23. Head 6, depth 7½ in total. Snout short, blunt. I-orb equals eye. Crest, no cirri. Upper and lower canines equal. D origin little before gillopening, fin not notched. In spirits, brown, marked as shown, dark blotch behind eye. 40-60 mm. Zanzibar, tide pools.

OMOBRANCHUS MEKRANENSIS (Regan), 1905 (**Pl 17, f 9,** Ibo). **Petroscirtes mekranensis** Bamber 1915, 483; Norman 1927, 381 (Red Sea). **O. cristatus** Fraser-Brunner 1951, 213, f 1 (Aden). D XI-XII 18-20 = 30-31. A II 21-22. P 13. V I 2. Depth 5¼, head 5. Eye 4½ in head, 1½ times I-orb. Crest in both sexes, starts above eye, in females low, angular, ⅓ eye high, in males up to ⅔ eye, end well before D. L.l. up to D base, ends at 9-10th spine. Gillopening ⅔ eye. Mouth to below front of eye, upper lip emarginate at side, lower with marked flap at side. 22-24 upper, 26 lower teeth, lower canine twice upper. D origin over gillopening, spines subequal, no notch, soft fin higher. A lower, rays increase behind, last D & A ray joined to Cd base. P 1.3, pelvic 1.5 in head. Cd rounded. Alive, as Pl 17, f 9. Preserved: variable, light to dark, with many vertical series of spots, in some run into lines across body, dark ocellus behind eye, 9-10 dark lines down over snout, 2-3 dark bars below up form V on chin, dusky spots on throat. Vertical fins variably dusky, oval dark blotch on 10-14th D rays, margin A dark. 20 specimens, 33-60 mm., Bazaruto, Ibo, Delgado, Zanzibar, Shimoni, Malindi, sterile areas. Agree well with a 48 mm. **O. mekranensis** Regan from Suez, also with 2 paratypes of **cristatus** Fraser-Brunner, Aden, kindly lent by Dr. E. Trewavas. I should not be surprised if **mekranensis** proves to be identical with **striatus** Jatzow & Lenz, 1898, as we did not find the latter despite intensive collecting. striatus (non-g.l.) Fowler 1931, Sub (Red sea) is this species.

Omobranchus banditus n. sp. (Pl 14, D).

O. striatus (**non** Jatzow & Lenz) Smith 1949, 345, Pl 74, fs 955, M & F. D 30-33. A 21-23. P 13. V I 3. Depth 6-6.5, head 5.5 in body. Eye 4-5 in head, twice I-orb. Triangular crest in males, mainly behind eye, faint ridge in females. Front nostril with plain flap behind. Lower canines little larger than upper, about 24 teeth in each jaw, sub-acute, no flap on lower lip at side. D origin little behind gillopening, in young, fin uniform, in large adults 5-6th D spines longest, shorten to last but no notch, soft rays increase to 11-14th, exceed body depth below, hinder shorter. Anal rays increase to 18-19th, hinder shorter. Last D & A rays joined to peduncle. P 1.2, pelvic 2 in head. Cd rounded. L.l. gently curved to base of 7-8th D spine, then 1-2 separate tubes. Alive, yellow to brown, with dark marks as in Pl 14, the bars distinct, also black spot above gillopening, crest dusky. Numerous specimens, 15-75 mm., Umgazi, S. Africa, north to Bazaruto, type, male, 50 mm., Umgazi. Weedy and muddy areas. Earlier recorded as **striatus** Jatzow & Lenz, but is a clearly distinct southerly form. Fig. in Smith 1949, Pl 74, crest and D shape both inaccurate.

OMOBRANCHUS ELONGATUS (Peters), 1855 (**Pl 17, f 1,** Ibo. **Pl 19, F,** Zanz.). **Petroscirtes elongatus** Peters 1855, 249 ; Gunther 1861, 233 (Moz.); Playfair 1866, 76 (Zanz.). **Petroscirtes kallosoma** Borsieri 1904, 210 (Eritrea). **O. elongatus** Smith 1949, 345, (Moz.). **O. kallosoma** Smith 1949, 345, Pl 76, f 956 (Moz.); and 1956, 888 (Aldabra). D XII-XIV 18-20. A II 21-23. P 13. V I 2 (rarely 3). 6 gillrakers. Depth 6, head 4. Eye 3½ in head, 1⅓ times I-orb. No crest. Mouth to below front of eye, both lips with downward flap at side. 20-26 teeth in each jaw, lower canines 1½ times upper. Gillopening equals eye. L.l. low, ends about below 7th D spine. D origin over gillopening, spines subequal, last shorter. Soft fin higher hindwards. A little less than soft fin. Last D & A ray joined to peduncle, sometimes hinder D rays and many A rays with expanded bladelike tips. P equals pelvic, 1-1.1 in head, sometimes small outer pelvic ray, inner longest. Cd truncate, upper and sometimes lower ray may be produced. Alive: as in Pl 17, f 1. Preserved: highly variable, most spirit specimens with angular cross bars as in Pl 19, others have small series of angulated spots along side, blotch on soft D and basal lines variable, almost all have spots on throat, few with indications of bars. Many specimens, 20-70 mm., Inhaca, north, Ibo, Pemba, Shimoni, Aldabra, turbid areas. Earlier named as **kallosoma** Bleeker, this issue in doubt, as 62 mm. specimen from Honolulu kindly sent by Dr. D. W. Strasburg, very similar, differs in distinct low crest on head and dark bars across throat, no spots there, also dark bar over pectoral base. This possibly justifies retention of **kallosoma** Bleeker, for Pacific form.

Omobranchus japonicus scalatus nov. (Pl 19, D, E).

O. japonicus Smith 1949, 344, Pl 76, f 957 (Delagoa). D XII-XIII 19-21 = 31-33. A II 21-23. P 13(12). V I 2. 6 gillrakers. Depth equals head, 5½ in body. Eye 3½-4, equals I-orb. No crest. Mouth inferior, to below eye, each lip with downward flap each side. 30-32 upper, 28-30 lower teeth, lower canine about twice upper. Gillopening ¾ eye, above P. L.l. little curved, ends below 9-10th D spine. D origin over P base, spines uniform, soft fin little higher. A little lower than 2nd D, last D & A rays joined to body. P 1.2, pelvic 2 in head, rays well separate. Cd rounded. Alive, as in Smith 1949, Pl 76, f 957, basically green, head and vertical fins pink, 3 dusky cross bars on head, meet below chin, one down over P base. Sometimes green spots on head and behind eye. About 10 dark cross bars on body. 5-7 lines from shoulder along body, most fade above A origin. Preserved: formalin, almost uniform ; spirits, as in Pl 19. In small young, lines on shoulder in form of separate blotches, later grouped as horizontal lines and cross bars. In some, lines from

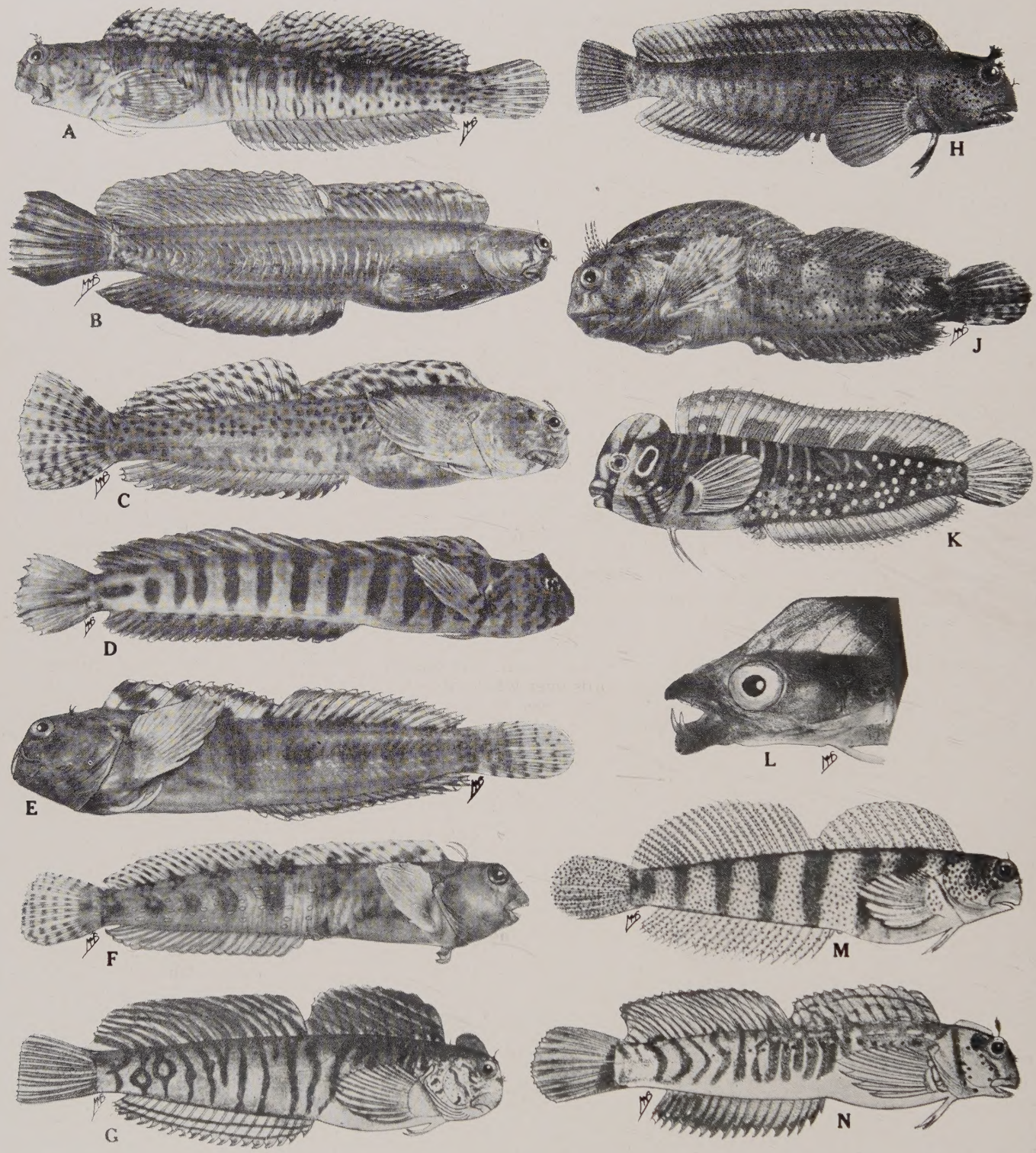

PLATE 14.

A.—**Halmablennius striatomaculatus** (Kner), fem. 80 mm. B.—**Istiblennius periophthalmus** (Val.), 140 mm. C.—**Entomacrodus striatus** (Q & G), male, 75 mm. D.—**Omobranchus banditus n. sp.** Type, 51 mm. E.—**Antennablennius (A) australis** F-B, 42 mm. F.—**Croaltus bifilum** (Gnthr.), fem., 63 mm. G.—**Istiblennius edentulus** (Schn.), male, 110 mm. H.—**Blennius cyclops** (Rupp.), after Ruppell. J.—**Blennius steindachneri** Day, male, 78 mm. K.—**Blennius pavo** (Val.), after Valenciennes. L.—**Xiphasia setifer** Swnsn., of 310 mm. fish. M.—**Istiblennius bellus impudens nov.**, fem., 122 mm. N.—**Halmablennius flaviumbrinus** Rupp., male, 118 mm.

shoulder start close below D. Most preserved specimens show eye size dark blotch above and little before gillopening, and A distally dusky. Many specimens, 30-75 mm., only in one restricted area, at Ponte Maone, Delagoa Bay, where water is turbid, and despite careful search nowhere else in whole W. Ind. Ocean. Type 42 mm., Delagoa. Closely related to **O. japonicus** Bleeker, 1869 known from Japan and Australia, nowhere nearer. These Delagoa specimens vary from typical form in presence of cross bars, bar over P, and dark spot on head before gillopening, and in view of unusual isolation merit at least subspecific distinction.

5. **Meiacanthus** Norman, 1943.

Type **Petroscirtes oualensis** Gunther, 1880. Gillopening entirely above P base. Lower canines much larger than upper. No crest, no cirri. 4-8 feeble D spines. Snout short, less than eye. I-orb not less than eye. Few species, one in our area.

Meiacanthus mossambicus n. sp. (Pl 17, f 8. Pinda).

D IV-V 25-27 (I x IV : 12 x V-11 x 25 : 1 x 26 : 1 x 27, total 30-31). A II 14-16. P 14. V I 3. Adult, depth equals head, 4⅓ in body, eye 3 in head, equals I-orb. L.1. up to base 4th D spine, runs as 3 or 4 tubes along D base, ends below 9-10th spine. Gillopening well above P base. Mouth to front of eye, 26 teeth in each jaw, lower canines enormous, upper small. Lower lip extends up, covers basal half of canine. D origin above preopercle margin, D & A joined to peduncle, A lower than D. P rounded, 1.6 pelvic 2 in head. In young, 22-30 mm., depth 2.5, body yellow, dark stripe from above eye, along back, ends top of peduncle : 2nd from P axil to peduncle, beyond this a light area, in which a dark spot at Cd base : 3rd band from below P base along A base. D basally light, distally black. A and pelvics dusky, P and Cd light, latter truncate. At 35 mm. body ovate, depth 3-3.5, 3 dark stripes along body faint, whole body speckled dusky, Cd fin light, D & A basally light, distal ⅓ jet black. Beyond 40 mm. in life as shown, body rich brown, Cd abruptly yellow, hind ends of centre rays brown, D & A dusky, distal ⅓ of D usually sharply black, sometimes dark mark between 1st and 2nd spines. Closely related and possibly identical with **atrodorsalis** Gunther, 1877 from Pacific, at present kept distinct with fewer rays average in A, yellow colour of Cd barely to peduncle, and D with black margin, not basally. 22-85 mm., with Cd filaments. 14 specimens from Pinda, Mozambique and Wamizi Isl., (Moz.), type, 80 mm. total length, Pinda. Taken by blasting at coral, not often seen.

6. **Dasson** Jordan & Hubbs, 1925.

Type **Aspidontus trossulus** Jordan & Snyder, 1902. Gillopening entirely above P base. Lower canines much longer than upper. No crest, cirri on head. 11 or more D spines. Snout sloping, interorbital wide, both not less than eye. About 12 species, 2 in our area.

DASSON VARIABILIS (Cantor), 1850 (**Pl 19, C**, Inhaca). As **Dasson** or **Petroscirtes variabilis** or **cynodon** Peters, 1855 or **breviceps** Val., 1836, many records over whole area. D XI 19-20. A II 18. P 15. V I 4. 16 rakers on whole arch. Depth 4½, head 4 in body. Eye 3½-4½ in head, 1-1½ in I-orb. Small simple cirrus at nostril, on eye, 3-4 along hind margin eye, one at L.1. origin, 3-4 each side on chin, front largest, all cirri at pores. Gillopening equals eye, above P base. L.1. up to 4th D spine, then along D base, at 11th spine, series faint pits down to mid side, then to Cd base. Mouth to front of eye, 40-42 teeth in each jaw, lower canine equals eye, upper much less, lower lip with large process at side covering canine. D lower in front, soft rays little higher, no notch, A slightly lower, last D & A ray joined to body. P 1.8, pelvic 1.6-2.1 in head. Cd rounded in young, then truncate, adults with top and lower rays produced. Alive, highly variable, greenish yellow as in Smith 1949, Pl 82, from eye to Cd a series of connected darker blotches, D basally dark, distally speckled red and yellow. Preserved, brown, eye width dark stripe from eye to Cd, dark bar along D base, variably spotted, fins otherwise light. Many specimens to 125 mm., 30°S in S. Af. north to Zanzibar, always among weeds. When handled alive generally contrives to impale finger with long fangs.

DASSON ANCYLODON (Ruppell), 1835. **Petroscirtes ancylodon** Ruppell 1835, 1, Pl 1, f 1. Klunz. 1871, 497. Bamber 1915, 483, Pl 46, f 2 (Red Sea). Borsieri 1904, 210 (Eritrea). D 30. A 19-20. P 13. Depth 3.5-4, head 3-3.6 in body. Eye 3-4 in head, less than I-orb. Simple cirri on chin, at eye, nape and shoulder. Lower

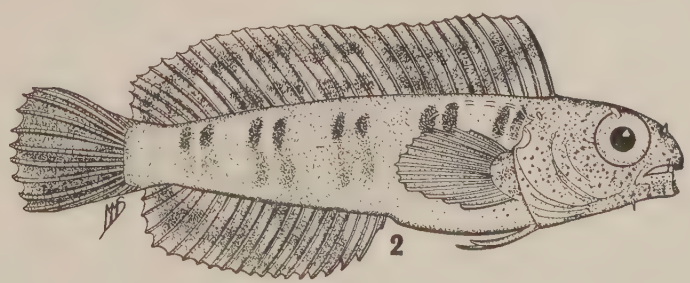

Fig. 2. **Dasson ancylodon** (Ruppell). 27 mm.

canines much larger than 1-2 upper. Alive, brownish, 6 irregular darker crossbars and spots, oval white spots on belly. D & A brownish, marbled, D edge with white spots. Cd with light margin. To 85 mm. Red Sea, Eritrea, only. Bamber 1915, 483, Pl 46, f 2, gives depth 4, head 3 in text, whereas fig. shows depth 4½,

head 4, and 85 mm. fish figured is close to **variabilis,** differs only in markings, no dark bar along D base, otherwise resembles exactly 80 mm. **variabilis,** at which stage Cd is rounded. I have seen only one 27 mm. specimen labelled **ancylodon** Ruppell, from Red Sea, kindly lent by Dr. E. Trewavas, too small for critical diagnosis as compared with my material of **variabilis,** smallest 50 mm. **ancylodon** accepted as distinct from **variabilis** with some doubt, more definite evidence to validate **ancylodon** will have to be advanced from adequate series.

7. **Enchelyurus** Peters, 1868.

Type **E. flavipes** Peters, 1868. Gillopening to mid P base. No crest, no orbital cirrus. Lower canines little larger than upper. D & A united with Cd. V I 2. Few species, one in our area.

ENCHELYURUS KRAUSSI (Klunzinger), 1871 (**Pl 18, J.** Aldabra). **Petroscirtes kraussi** Klunz. 1871, 497 (Red Sea). **Enchelyurus kraussi** Marshall 1952, 241 (Red Sea). Smith 1956, 888; and 1958, 61, Pl 1, f 1 (Aldabra). D VIII 22-23. A II 19. P 13-16. V I 2. Depth equals head, 4¼ in body. Eye 3 in head, 1.2 times I-orb. Gillopening to mid P base. L.l. curves up to base of 5th D spine, 9 tubes to 1st soft ray, bends there and runs as faint pits to Cd base. Mouth to mid eye, flap at side on upper lip, about 30 upper and 40 lower teeth, lower canines larger. D higher behind, no notch, A rays subequal, both fins fully united with Cd. P equals pelvic, 1.2 in head. Cd rounded. Black brown, Cd and P lighter. 6 specimens, 15-42 mm., Malindi, Aldabra, Seychelles. In small young, 15 mm., D & A barely reach basal ¼ of Cd, at 18 mm. to ½ way over Cd, not fully united. In adults P rays vary 13-16. Live fish has 2 blue bars through brilliant ruby eye.

8. **Cruantus nov.**

Type **Omobranchus dealmeida** Smith, 1949. Gillopening to below upper edge of P base. No crest, no cirri. Lower canines little more than upper. Snout sloping. D & A free from Cd. Differs from **Omobranchus** Val., in sloping snout, and gillopening to below upper edge of P base. 2 species in our area.

CRUANTUS DEALMEIDA (Smith), 1949 (**Pl 19, A**). **Omobranchus dealmeida** Smith 1949a, 104; and 1949, 507, Pl 76, f 956. D XI 22. A II 22-23. P 13. V I 2. Depth 5.7, head 4.6 in body. Eye 4.5 in head, less than sloping snout, 1.1 in I-orb. Gillopening to upper part of P base. L.l. of 3 tubes in front, as faint groove towards base 4th D spine, bends below 9th spine, then along mid side almost to Cd base as faint grooves. Mouth barely to eye, 18 teeth in each jaw, lower canines 1½ times upper. D spines lower than soft fin, no notch. A lower than D, last D & A rays joined to peduncle. P 1.1 in head, pelvics equal head, inner ray longer, separate to near base. Cd truncate. Alive, as in Smith 1949, Pl 76, as preserved, uniform. Only 2 specimens, Ponte Maone, Delagoa, type, 54 mm.

CRUANTUS PETERSI (Kossman & Rauber), 1877 (**Pl 18, K**). **Petroscirtes petersi** Kossman & Rauber 1877, 21, Pl 2, f 9 (Red Sea). Not seen. D X 24. A 25. Depth 6, head 4½ in body. Eye 4 in head. Gillopening over almost whole P base. 30 teeth in each jaw, lower canine little larger than upper. D starts over gillopening, even. Pelvics small. Blue white, scattered deep blue spots. Black stripe along back from snout, tapers to Cd. On 13-17th A rays an oval whitish spot, other fins colourless. Only the type, 55 mm., Red Sea.

9. Genus **Runula** Jordan & Bollman, 1890.

Type **R. azalea** J & B, 1890. Gillopening to below upper edge of P base. No crest, no orbital cirrus. Upper teeth larger and fewer than lower, about 40 upper, many more lower. No upper canines, lower large. D 43-47. A 30-35. P 12, rarely 13. V I 3. Well distinguished from **Aspidontus** Cuv., by dentition alone. Indo-Pacific, few species.

A. 2 stripes along body:
   I. Stripes along D & A bases ..... **amblyrhynchus**
   II. Stripes along mid flank ..... **rhinorhynchos**
B. One interrupted stripe along flank ..... **tapeinosoma**

RUNULA AMBLYRHYNCHUS (Bleeker), 1857. **Petroscirtes amblyrhynchus** Angot 1950, 460 (Madag.). Arnoult 1958, 86 (Aldabra). Not seen. D 44-46. A 31-33. P 12. V I 3. Depth about 6, head about 4 in body. Gillopening to mid P base. L.l. ends opposite P tip. Pelvics equal eye. Preserved: brown, from snout stripe along D base, 2nd along A base, both to Cd base. Median stripe from snout to D origin. D with 7, A with 5 darker cross bars opposite. To 43 mm. East Indies, rare, only 2 specimens reported from our area, should be confirmed as not juveniles of **rhinorhynchos** Blkr.

RUNULA RHINORHYNCHOS (Bleeker), 1852. (**Pl 17, f 7.** Ibo). **Petroscirtes rhinorhynchos** or **rhinorhynchus** Smith 1949, 346, Pl 21, f 962 (Moz.). Angot 1950, 460 (Madag.). D XI 33-35. A II 31-33. P 12. V I 3. Depth 7, head 5; eye 4 in head, equals I-orb. Gillopening equals eye, to mid P base. No L.l. visible. Snout rounded from above. About 40 teeth in upper, 70 in lower, lower canine exceeds eye. D uniform, no notch. A subequal, last ray bound to peduncle. P 1.8, pelvic 3.3 in head. Cd emarginate. Alive as Pl 17, preserved, brownish, fins light, traces of 2 blue stripes along body, at base of Cd dark blotch. 7 specimens, 90 mm., Inhaca, Moz., Pinda, Zanz., Malindi, Aldabra, appear exactly similar to Pacific fish. Often seen swimming free near coral, not timid, but difficult to capture.

RUNULA TAPEINOSOMA (Bleeker), 1857 (**Pl 19, B.** 32°S). **Petroscirtes tapeinosoma** Klunzinger 1871, 495 (Red Sea); Smith 1935, 213, Pl 21, f B; and 1937, 194 (S. Af.). **Aspidontus tapeinosoma** Smith 1949, 346, Pl 21, f 963 (Moz.); Steinitz and Ben-Tuvia 1955, 8 (Red Sea). D 45-47. A 30-33. P 12. V I 3. Depth 7-8, head 5½-6. Eye 3½-4 in head, 1-1.2 in I-orb. Gillopening less than eye, to below upper edge P base. Snout pointed, sharklike. About 40 upper teeth, and 75-80 lower, lower canines equal eye. D spines about 8, diffi-

cult to distinguish from rays, fin uniform, A little lower, last D & A rays joined to peduncle. P equals pelvic, 1.8 in head. Cd emarginate. Alive, as in Smith 1949, Pl 21, bluish, chin, chest and Cd orange, P yellow, dark blue bar along D base, wide blue stripe over snout along side, behind P broken into bars, unite and extend thinly on Cd. D & A greenish, D basally lighter. Many specimens to 100 mm. from 33°S in S. Af. north to Malindi and Islands to Seychelles. Appears identical with Pacific specimens.

10. **Aspidontus** (Cuv.) Quoy and Gaimard, 1835.

Type **A. taeniatus** Q & G, 1835. Gillopening to mid P base. No crest, cirri on chin. Upper and lower teeth subequal, less than 40. Small upper canines may be present, lower larger. Blue stripe along body. D low. V I 3-4. Less than 10 species, 2 certainly in our area; possibly 4. Merits division into 2 subgenera as follows :

A. Stripe widens behind. No upper canines. V I 3-4 ..... **Aspidontus**
B. Stripe more or less uniform. Upper canines. V I 3 ..... **Escadotus nov.**

Subg. **Aspidontus** Q & G, type **taeniatus** Q & G.

ASPIDONTUS (ASPIDONTUS) TRACTUS Fowler, 1903 (**Pl 17, f 14**, Bazaruto). **A. taeniatus (non** Q & G), Smith 1955, 25, f 32 (Mozam.): and 1956, 888 (Aldabra). D XI 26-27. A II 26-27. P 14. V I 4. Depth 5, head 4. Eye 5½ in head, less than I-orb. Snout pointed, sharklike. 28-30 teeth in each jaw, lower canine equals eye, no upper. Gillopening exceeds eye, down to upper 3rd P base. L.l. up to base of 5th D spine, along D base, obsolete about 10th spine. D origin close behind eye, fin uniform, A similar, last D and A ray joined to Cd base. P 1.8, pelvic 2.5 in head. Cd little rounded. Live colour mainly blue as shown in Pl 17, preserved, same, blue tenacious, but faded. 7 specimens, Inhaca, Pinda, Dar Es Salaam, Zanzibar, 45-120 mm. Closely related to and possibly only a subspecies of **taeniatus** Q & G, but W. Ind. Ocean specimens all have a bar across P base.

Subg. **Escadotus nov.,** type **P. fluctuans** Weber, 1909.

3 species in our area :

A. Stripe interrupted :
  I. D 40. A 24 ..... **gorrorensis**
  II. D 40-41. A 27-30 ..... **fluctuans**
B. Stripe plain, uninterrupted ..... **wamiziensis n. sp.**

ASPIDONTUS (E) GORRORENSIS Herre, 1936. Fourmanoir 1954, 208 (Comores). Not seen. D 40. A 24. Depth 7, head 4 in body. Small lower canine. In life with blue stripe from eye through P base to Cd base, crossed by 10 light bars. D & A dark distally, light basally. To 44 mm. Rare, known from New Guinea and Pelew Is., Pacific; Comoro specimen needs confirmation.

ASPIDONTUS (E) FLUCTUANS Weber, 1909 (**Pl 17, f 6**. Pinda). **Petroscirtes fluctuans** Arnoult 1958, 86 (Aldabra). D X 30-31. A II 25-28. P 14. V I 3. Depth 7½, head 4¾. Eye 4 in head, 1.2 times I-orb. Many pores on top of head. Snout rounded, mouth inferior, cleft not to eye, 26-28 upper, 28-30 lower teeth, lower canines equal eye, upper tiny. L.l. up to base of 4th D ray, along D base, bends at base of 12th D ray, then obsolete. Gillopening about equals eye, extends to mid P base. D origin above preopercle, 1st ray short, rest equal, A lower, last D & A rays joined to body. P 1.7, pelvic 1.5 in head. Cd rounded. Alive, as in Pl 17; preserved, yellowish, with dark marks as shown, dark border on D & A, in juveniles whole D & A dark. 8 specimens, 42-82 mm., Bazaruto, Pinda, Shimoni, in coral rubble, largest found 2 miles off-shore at Pinda (Moz.), in sargassum. Agrees closely with Weber's description, his specimens all less than 50 mm. Earlier known from E. Indies, W. Pacific and Japan, rare.

Aspidontus (E) wamiziensis n. sp. (Pl 17, f 10).

D X 31. A II 30. P 14. V I 3. Only the type, 85 mm., Wamizi Is. (Moz.), in most respects like **fluctuans** Weber, but has 2 rays more in the anal, and the markings differ, notably the lateral stripe, which is continuous, distinct preserved also.

11. **Blennechis** Valenciennes, 1836.

Type **B. filamentosus** Val., 1836. Gillopening over whole P base. No crest or cirri. Front teeth in jaws subequal, less than 40, upper canines small, lower large. Front D spines form elevated crest. V I 3, 1st ray elongate. Only the type.

BLENNECHIS FILAMENTOSUS Valenciennes, 1836 (**Pl 17, f 3,** juv. Pemba). **Petroscirtes filamentosus** Klunz., 1871, 495. Gnthr. 1861, 231 (Red Sea). **Aspidontus filamentosus** Smith 1949, 961, Pl 21, f 961 (Moz.); and 1956, 888 (Aldabra). Fourmanoir 1954, 208 (Comores). D XI-XII 26-27. A II 26-27. P 14. V I 3. Depth 6, head 3¾ in body. Eye 4 in head, equals I-orb. Snout pointed, sharklike. Mouth to front of eye, 20 upper, 16 lower teeth, lower canines strongly hooked back, 5 times size of upper similar. Gillopening to lower edge P base. L.l. up to base of 5th D spine, 7 tubes along D base to 10th spine, bends down as line of pits to mid side then to Cd base. D origin close behind eye, front 3-4 spines form high crest, equals head, hinder spines shorter than front soft rays, no notch. A as high as hind D. Last D & A ray joined to body. P equals pelvics, 1.6 in head. Alive, the young green, as in Pl 17, with age blue, band over snout through eye along body widens behind as in Smith 1949, Pl 21, f 961. 4 specimens, to 60 mm., Inhaca, Pinda, Ibo, Pemba, rarely seen. By many workers casually regarded as male of **Aspidontus taeniatus** Q & G (q.v.); curiously enough all my specimens are males, but I have both sexes of **taeniatus**, and Tomiyama & Abe, Fig.Descr.Fish.Jap.

1956, 1074, Pl 212, f 560 describe a 46 mm. female of **filamentosus.** In any case this species differs from **taeniatus** and others of **Aspidontus** Cuv., so clearly as to merit full generic distinction.

12. **Hypsoblennius** Gill, 1861.

Type **Blennius hentz** Lesueur, 1825. Gillmembranes united with isthmus, openings lateral only, to below P base. Less than 40 fixed teeth in each jaw, no canines. No crest. Cirrus at eye ciliate. Few species, one in our area.

HYPSOBLENNIUS NIGRESCENS (Sauvage), 1880. **Blennius nigrescens** Sauvage 1880, 215 (Madag).

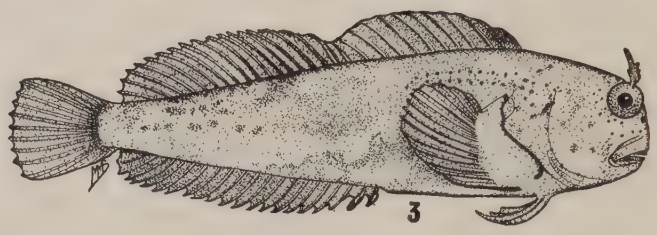

Fig. 3. **Hypsoblennius nigrescens** (Sauvage), Type.

D XII 17. A II 19. P 14. V I 3. L.l. of 9 double pores, then 2-3 single, ends below 9th D spine. Depth equals head, 3.8 in body. Eye 4 in head, I-orb 4/5 eye. Snout blunt. Ocular tentacle exceeds eye, palmate, 4 points. Gillopening only to lower edge of P base. Teeth in jaws subequal, lower hindwards with points more retrorse, no canines, palate edentate. D origin little before gillopening, hardly notched, of even height, anal slightly lower. Last rays of D & A joined to peduncle well before Cd. Preserved, uniform brown. One only, 90 mm., No. 6379, the type, Madagascar, kindly lent by Professor J. Guibe of Paris. Probably identical with the W. Pacific **sordidus** Bennett, 1829.

13. **Xiphasia** Swainson, 1839.

Type **X. setifer** Swainson, 1839. Body very long and compressed. D starts over eye, this and A very long, more than 100 rays. Gillopening small. Lower canines much larger than upper. Probably only 1 species.

XIPHASIA SETIFER Swainson, 1839 (**Pl 14, L.** 33°S). **X. setifer** Smith 1949, 346, Pl 82, f 964 (Moz.). **Nemophis lessoni** Sauvage 1875, 476: Blkr. and Pollen 1875, 73 (Madag.). **Xiphasia madagascariensis** Blkr. & Pollen 1875, 103 (Madag.). **Xiphogadus madagascariensis** Plyfr. 1868, 11 (Madag.). D 120-130. A 90-110. P 13. V I 3. 11 rakers. Depth about 30, head about 15 in body. Eye $3\frac{3}{4}$, equals I-orb. Gillopening less than eye, above P. L.l. up to base of 8th D ray, runs along D base, ends at 14-15th ray. Mouth to front of eye, 28 pointed upper teeth, 26-28 lower, lower canines $\frac{3}{4}$ eye, upper much smaller. D origin over eye, in front more than body depth, lessens behind, A lower than D, lessens behind. P 2, pelvics 3 in head. Cd short, pointed. Alive: as Smith 1949, Pl 82; preserved, uniform brown, vertical fins light with dark edges. Rare, we have only 3 specimens to 310 mm., one from S. Af. 33°30'S, one from Durban: and one kindly sent by M. P. Fourmanoir from N. Madagascar.

Species of Uncertain Identity

1. **Blennius cyclops** var **punctatus** Kossman & Rauber 1877, 21 (Red Sea). Differs from **cyclops,** but little data.
2. **Omobranchus fasciolatus** (Ehrb.). Egypt. Val., 1836, 287. Hemprich & Ehrenberg 1899, Pl 9, f 1.
3. **Omobranchus heyligersi** (Blkr.) 1858, from freshwater, Sumatra; rec. E. Af. by Jatzow & Lenz 1898, 513.
4. **Petroscirtes dussumieri** Val., 1836 doubtful species, recorded by Bleeker & Pollen 1875, 74, and Sauvage 1875, 522 (Borbonia): Arnoult 1958, 86 (Aldabra).
5. **Petroscirtes vincinguerria** Borsieri 1904, 211. Eritrea. States D 12/18, A 21.

FAMILY SALARIIDAE

The members of this family live in tropical seas, few penetrating to more temperate areas. Most have movable fine hair-like teeth planted in the lips, and feed on algae scraped from rocks. The intestines are longer than those of most Blenniid fishes. Many live in pools at and above high water mark, spending much or most time out of water, being extremely agile, and jump as far and fast as locusts, difficult to capture. A few live only in weeds, some always hidden in sand, hardly any frequent live coral. Because of their wide distribution the Salariidae present many difficult systematic problems. In this work, forms which resemble those from the Pacific, not before recorded here or from anywhere in the vast intermediate area, have been given subspecific rank. The 40 species of the W. Indian Ocean here listed fall in 17 genera, 6 defined as new; 5 new species and 5 new subspecies are described, while 15 appear to be endemic. In addition, records of 4 species of uncertain identity are listed below.

A. More than 100 teeth in each jaw, freely movable:
   I. A transverse series of cilia on skinny flaps, continuous across nape, no crest. L. l. complete. Body rather short and robust (Cirripectinae):
      (a) No canines. Barbels on chin ..... 1. **Exallias**

(b) Lower canines. No barbels:
1. Vomer edentate. Upper lip crenulate ..... 2. **Cirripectus**
2. Teeth on vomer. Upper lip smooth ..... 3. **Pereulixia nov.**

II. No distinct series of cilia across nape. L.l. rarely complete. Body usually longer (Salariinae):
(a) Caudal rays all simple:
1. Cirrus above eye simple, one at nape ..... 4. **Atrosalarias**
2. Cirrus above eye multifid, none at nape:
x. Vomer edentate. P 15. V I 4:
i. D spines not free. No fleshy knobs on chin ..... 5. **Alticus**
ii. D spines filiform, free apically. Fleshy knob each side chin. 6. **Damania nov.**
y. Teeth on vomer. P 14. V I 3. ..... 7. **Lophalticus**
(b) Divided rays in caudal:
1. Teeth on vomer ..... 8. **Entomacrodus**
2. Vomer edentate:
x. Front anal rays of male markedly longer than others. Normally D XII, V I 2 ..... 9. **Salarias**
y. Front anal rays of male not markedly elongate. D XIII-XIV. V I 3:
i. Orbital cirrus not ciliate ..... 10. **Istiblennius**
ii. Orbital cirrus bushy or ciliate ..... 11. **Halmablennius**

B. Less than 100 lower teeth, rigid to fairly so:
I. More than 100 flexible upper teeth: (Ecseninae)
(a) Caudal rays all simple. 45-50 lower teeth. No nuchal cirrus ..... 12. **Ecsenius**
(b) Divided rays in caudal. About 80 lower teeth. Cirrus at nape ..... 13. **Stanulus nov.**
II. Less than 100 upper teeth, usually rigid or fairly so: (Rhabdoblenninae)
(a) Teeth on vomer ..... 14. **Hirculops nov.**
(b) Vomer edentate:
1. No cirrus at eye, pair on nape:
x. Nuchal cirrus longer than nasal and than eye ..... 15. **Croaltus nov.**
y. Nuchal cirrus less than nasal and than eye ..... 16. **Antennablennius**
i. 1st D spine plain ..... Subg. **Antennablennius**
ii. Skinny flap on front of 1st D spine ..... **Litanchus n. subg.**
2. Cirrus at eye:
x. About 70 upper teeth, no canines, cirrus on nape ..... 17. **Glyptoparus nov.**
(y. 40-50 upper teeth, lower canines. No nuchal cirrus ..... 18. **Rhabdoblennius**)

1. **Exallias** Jordan & Evermann, 1905.

Type Salarias brevis Kner, 1868. Cirrus at eye and nostril single based, nape with continuous transverse row of cilia. Lips crenulate, lower teeth little movable, larger than upper, no canines. Barbels on chin. L.l. complete. One species.

EXALLIAS BREVIS (Kner), 1868 (**Pl 17, fs 11, 12,** Inhaca, Pinda). **Cirripectus leopardus** Smith 1955, 25, Pl 11, f 30 (Inhaca): and 1956, 888 (Aldabra). D XII 13. A II 14. P 15. V I 4. 12-13 small rakers. Depth 2½, head 3½ in body. Eye 3-3½ in head, equals I-orb. No crest. Nasal cirrus with 5-6 cilia, that above eye broad, with 5-10 cilia. 30-36 single cilia at nape. 18-22 lappets on upper lip, lower with row of fleshy processes behind, largest half-way along, next to barbel, latter may be double. Mouth to below eye, upper teeth fine, movable, lower larger, fixed, no canine. D origin over preopercle, 2 fins subequally high, deep notch, last ray bound to base of Cd. A lower than D, ends of rays and last ray free. P to or beyond A origin, pelvics 1.2 in head. Cd little rounded. L.l. complete. Alive, as Pl 17; preserved, yellow-brown, spots dark. 8 specimens, 48-103 mm., Inhaca, Bazaruto, Pinda, Moz. Isl., Aldabra, Ibo, Assumption. Rare. Opinions about **brevis** Kner and **leopardus** Day have varied, Schultz 1943, 272 kept them separate, but most later work considers them identical, as indicated by our W. Ind. Ocean material.

2. **Cirripectus** Swainson, 1839.

Type **Salarias variolosus** Val., 1836. Cirri at eye and nostril single based, continuous row of cirri across nape. Lips crenulate, upper and lower teeth subequal, lower canines. No barbels on chin. L.l. to caudal base. Indo-Pacific, tropical, few species, variable, differentiation troublesome, nominally 4 in our area.

A. More than 50 cirri across nape ..... **fuscoguttatus**
B. Less than 50 cirri across nape:
I. Body dark:
a. Bars, sometimes spots ..... **variolosus**
b. Red spots ..... **cruentus n. sp.**
II. Body bright red and yellow ..... **perustus n. sp.**

CIRRIPECTUS VARIOLOSUS (Valenciennes), 1836 (**Pl 19, L,** Malindi). **Salarias castaneus** Val., 1836, 324; Gnthr. 1861, 247 (Reun.); Sauvage 1891, 390, Pl 41, f 7 (Madag.). **Salarias sebae** Klunzinger 1871, 491; Jatzow & Lenz 1898, 513; Regan 1908, 250 (Red Sea, E. Af.). **Cirripectus sebae** Steinitz and Ben-Tuvia 1955, 8 (Red Sea). **Cirripectus gibbifrons** Smith 1949, 347 f 966 (Moz.); Fourmanoir 1954, 208 (Comores). D XII 14 (rarely 15). A II 14-15. P 15. V I 4. About 25 fine gillrakers. Snout blunt. Nasal cirrus with 4-6 cilia, that at eye with 5-6 cilia, ½ eye. 30-40 simple cilia at nape. L.l. continuous to Cd. Mouth to behind eye. 40-50 lappets on upper lip, mid lower smooth, crenulate at sides, with small flap. Small lower canine. D either uniform or soft fin higher, last spine short, hidden, moderate notch, in males 1st spine elongate, up to head length, 2nd little less, last ray joined beyond Cd base. A lower than soft D, last ray double, free, in male spines dendritic. P equals head, to beyond A origin, pelvic 1.3 in head. Cd little rounded. Alive and preserved: dull brown, plain, or with dark bars on head and body, front of D and upper Cd lobe lighter. Many specimens, to 95 mm., Inhaca north over whole W. Ind. Ocean to Seychelles, not uncommon. I cannot find any constant difference between **variolosus** and **sebae** Val., this is clearly a variable species, some have reticulations on chin, others spots on body.

CIRRIPECTUS FUSCOGUTTATUS Strasburg & Schultz, 1953 (**Pl 19, J,** La Digue). Strasburg & Schultz 1953, 130, f 1. D XII 14. A II 15. P 15. V I 4. 22 fine gillrakers. Depth 3, head 3¾ in body, eye 4 in head, equals I-orb. Nasal cirrus with 6-7 cilia, that above eye broad, with 10. 66 single cilia across nape. Teeth subequal, large lower canine. D origin over opercle, 1st spine longest, last very short, deep notch, soft fin much higher, ⅔ body depth, last ray joined to Cd base. A lower than D, tips of rays and last ray free. P beyond A origin, pelvics 1.2 in head. Cd subtruncate. Alive: more or less uniform dark brown with many small dark spots on body and head, fins dark, plain. One only, 125 mm., La Digue (Sey.), male. Agrees well enough with original description of **fuscoguttatus** Strasburg & Schultz, 1953 from C. Pacific, not previously found in Ind. Ocean.

Cirripectus cruentus n. sp. (Pl 18, F).

D XII 15. A II 16. P 14. 20 gillrakers. Depth 3, head 3½. Eye 3½ in head, 1½ times interorbital. Nasal cirrus half eye, with 5 cilia; that above eye ⅔ eye, 6 cilia, 42 simple cilia across nape, 42 lappets in upper lip, lower mainly plain, few lappets at side. Mouth to below mid eye, lower canine. L.l. complete, double pores in front. Ist D spine longest, others subequal, last much shorter, deep notch, soft fin barely higher, last ray joined to Cd base. A longer behind, last rays equal 2nd D. P to A origin, pelvics 1.5 in head. Alive, brownish, scarlet reticulations on head, scarlet spots scattered over mid part of body, front of D and upper part of Cd lighter. Only the type, 77 mm., Pinda, differs from other species in markings.

Cirripectus perustus n. sp. (Pl 17, f 5).

D XII 14. A II 15. P 14-15. 20-22 low rakers. Depth 3¼, head 3½, in body. Eye 3 in head, 1⅓ times interorbital. Nasal cirrus equals eye, 5 cilia; that above eye broad, 8 cilia. 36 simple cilia across nape. Ist D spine longest, hinder little shorter, no notch, soft rays higher, longest ⅔ body depth, last ray joined beyond Cd base. Anal spines dendritic, fin lower than soft D, ends of rays and last free. P to A origin. Pelvics 1.3 in head. Cd rounded. L.l. complete, double pores in front. Mouth to below hind edge eye, upper lip with 40 lappets, lower lip irregularly crenulate, about 20 lappets, teeth all small, moderate canine. Alive as in Pl 17, f 5; preserved, uniform brown. Type, 88 mm., and one other specimen, 90 mm., Malindi. Differs from other species in unusual bright colour.

3. **Pereulixia nov.**

Genotype **Salarias kosiensis** Regan, 1908. Lower teeth not easily movable, larger than upper and about ⅓ as many, small lower canine each side, row of stout conical teeth on vomer. Upper lip smooth. Nuchal cirri bushy, of many units, each with broad base and 3-8 cilia, basal flaps overlap. Cirrus at eye single, long, rodlike, tapering. Gillrakers pediculate, apically 3-6 cilia. Dorsal rays 11-12. One species, S.E. Africa.

PEREULIXIA KOSIENSIS (Regan), 1908 (**Pl 18, E,** Inhaca). **Salarias kosiensis** Regan 1908, 254, Pl 42, f 3 (Zululand). **Cirripectes k.** Smith 1949, 347, Pl 75, f 965 (Natal, Moz.). D XI-XII 11-12. A II 12-14. P 9-10+5-7 = 15 (rarely 16). V I 4. 14 gillrakers. Depth equals head, 3½. Eye 4, 1-1½ times concave I-orb. Robust body, skin thick. Many pores, and papillae on head. Hind nostril an oval pore close before eye, front a low tube, hind edge with multifid process, its base wide, with 4-5 processes, each with 3-5 cilia. Cirrus at eye single, rodlike, tapering, in females little exceeds eye, in males up to ¾ head, apex may be bifid. Nuchal cilia of 2 units each side, not joined at mid line, units on side of nape overlap slightly, upper with 10-12, lower with 14-16, set transversely above, each with 3-8 cilia, giving "bushy" appearance, lowest part of lower flap with bifid or simple cilia, lower margin at mid eye level. Gillmembranes free, form fold across isthmus, on whole arch 14 rakers, short, pediculate, 3-6 apical filaments. Mouth sub-terminal, maxilla to front pupil edge, both lips smooth, upper double entire width, lower with 2-3 crenulae each side, and flap below. Teeth small, barely movable, about 50 lower teeth, end half-way along, in upper 150-160 fine teeth along whole jaw, smaller behind and more freely movable. On vomer a row of 7-9 curved conical teeth. L.l. almost straight from origin, bends down at P. apex, then to Cd base, 1st 10-12 pores double, rest single. 1st D lower than soft, deep notch behind 11th spine, last usually minute, hidden, last soft ray joined to body before Cd. A spines in males large, dendritic, last A ray free. P rays simple, lower 5-7 enlarged, upper longest. Pelvic spine short, hidden, 3-4th rays slender, hidden. Pelvics far short of anus, P to about A origin. Cd sub-truncate. Alive: brownish, mottled and marbled in darker, with green and red shades.

PLATE 16

1. *Istiblennius bellus impudens nov*, type, male, 125mm. 2. *Istiblennius gibbifrons insolitus nov*, type, 69mm. 3. *Glyptoparus delicatulus n. sp.*, type, 33mm. 4. *Istiblennius chrysospilos insulinus nov.*, type fem, 96mm. 5. Same as 4, allotype, male, 130mm. 6. *Hirculops cornifer menos nov*, type, fem, 60mm. 7. *Istiblennius andamanensis* (Day), fem, 68mm.

Dark spots on head, variable, one or two large below and behind eye. Small lightringed ocelli on flanks, fins marbled, light streak on P base and several dark spots above on fin. Attains 200 mm. Tide pools in weeds, Durban to Beira, very agile, hard to catch, freely leaves the water, jumps 5-6 ft. per hop.

4. **Atrosalarias** Whitley, 1933.

Type **Salarias phaisoma** Blkr., 1855 (= **fuscus** Ruppell, 1828). No crest, small simple cirrus at nape, eye and nostril. Lappets on upper lip, lower smooth, teeth minute, movable, small canine below. Cd rays simple. No notch in D. One species.

ATROSALARIAS FUSCUS (Ruppell), 1835. **Salarias fuscus** Ruppell 1835, 135, Pl 32, f 2; Gunther 1861, 245; Klunzinger 1871, 489; Day 1878, 330, Pl 70, f 2; and 797 (Red Sea); Borsieri 1904, 209; Pellegrin 1904, 543 (E. Africa). **Atrosalarias fuscus** de Beaufort and Chapman 1951, 255, f 44.

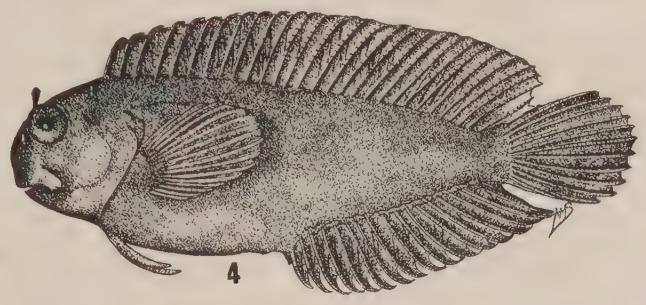

Fig. 4. **Atrosalarias fuscus** (Rupp.). 72 mm. Zanz.

D XI 18-19. A II 18-19. P 16. V I 2. 23 gillrakers. Depth 3; head $3\frac{3}{4}$ in body. Eye 3 in head, equals I-orb. Snout blunt, rounded. Nasal cirrus about $\frac{1}{2}$ pupil, that at eye little exceeds pupil, that at nape up to pupil length. Mouth to below mid eye, lips not continuous across front, upper irregularly crenulate, about 25 lappets, most small, 4-5 each side larger, lower lip smooth. Teeth in each jaw fine, movable, tiny lower canine. D higher behind, no notch, last 5-6 rays shorter, last bound $\frac{1}{3}$ up on Cd. In females 1st A spine hidden, both short in both sexes, membrane of 1st 5-6 rays deeply incised, in males these elongated, with wide membrane before and behind, 6th ray shortest, others longer behind, last shortest, bound to base of Cd. P to or near A origin, pelvic barely half-way to anus, Cd. rounded. Alive: almost uniform black-brown, but last D ray and membrane, P and tips of front A spines lighter. To 72 mm., recorded from Red Sea and Eritrea, now found south to Ibo, Moz., rare. My specimens all have 11 D spines and a tiny lower canine, none have hind D & A rays longer, nor any yellow colour in life.

5. **Alticus** Lacepede, 1800.

Type **A. saltatorius** Lac., 1800 (= **saliens** Forster, 1788). Crest in males, sometimes females. No nuchal cirri, that at eye ciliate, at nostril simple. Mouth inferior, no disc on chin, lower canine present, palate edentate. Cd rays usually simple. Indo-Pacific, few species, one in our area.

ALTICUS SALIENS (Forster), 1788 (**Pl 18, H**). **Alticus saltatorius** Blkr. & Pollen 1875, 74; Sauvage 1891, 522 (Maur.). **Salarias alticus** Guichenot 1863, 27 (Reunion). **Salarias tridactylus** Gunther 1876-81, 200, Pl 117, fs C & D; Day 1878, 330, Pl 70, f 3 (Red Sea); Steindachner 1902, 166 (Arabia); Tortonese 1941, 3; Angot 1950, 187 (Somalil.). **Salarias aldabrensis** Regan 1912, 302. D XIV (XIII-XV) 22 (21-23). A II 24-26(27). P 15. V I 4. Depth 6-7, head 5-6 in body. Snout blunt. High crest in males, in females low median ridge. Small simple nasal cirrus, that at eye short, with 2-3 blunt cilia. Mouth inferior, both lips crenulate, lower canine in males. No L.l. D high in males, much lower in females, spines shorten behnid, small notch, last D ray joined to Cd base, last A ray free. P barely to A origin, lower few rays thick. Pelvic 2 in head. Cd rounded, tips of rays free, lower 4 rays short and thick. In life dark, light blotches along D base and bars across body. In females, anal light, in male light basally, dark stripe distally. To 80 mm. Red Sea to mid Pacific, mostly out of water, not found by us in W. Ind. Ocean. Fish described by Klunzinger 1871, 489 as **S. tridactylus** not this species. A female paratype of **S. aldabrensis** Regan kindly sent by Dr. E. Trewavas, appears to fall here.

6. **Damania nov.**

Type **Andamia anjouanae** Fourmanoir, 1954. Elongate body. Males with high rounded crest. Tiny nasal cirrus, broad one at eye. Both lips may be crenulate, canines may be present, vomer edentate. Lips with folds at corner, no true sucker behind lower lip. D XIII-XIV, spines filiform. This is the W. Ind.Ocean analogue of **Andamia** Blyth, not yet found there. Possibly only one species, 2 recognised here.

A. 1st D spine longest in males. No canines ..... **anjouanae**
B. 2nd D spine longest in males. Canines present ..... **monochrus**

DAMANIA ANJOUANAE (Fourmanoir), 1954 (**Pl 18, A,** male, La Digue. **B,** fem., St. Pierre). **Andamia anjouanae** Fourmanoir 1954, 207, f 4 (Comores). D (XIII)XIV 22. A II 24-26. P 15. V I 4. Depth 7, head 6 in body. Eye 4 in head, 3 times I-orb. Snout convex. In males, high rounded crest, starts before mid eye, almost to D origin, twice as long as high, height to $1\frac{1}{2}$ times eye, adult females develop low fleshy ridge. Nasal cirrus simple, $\frac{1}{2}$ pupil, that at eye palmate, 5-7 cilia. Mouth inferior, upper lip thick, crenulate, about

15 lappets over mid part, each side expands into 2 fleshy knobs, behind these a fleshy knob on chin, between is central depressed area, possibly forms crude sucking disc. Teeth minute, movable, no canine. In males D high, spines filiform, 1-2nd longest, 2-2¼ times body depth, rest less behind, last short, 2nd fin body depth, little lower behind, edge of fin rounded, half of last ray bound to body. Females, 1st D highest in front, about ½ body depth, half last ray bound to body before Cd. In both sexes A little lower than soft D, rays subequal, last free, in females 1st spine hidden. P broad, near or to A origin. Pelvic ⅔ head. Cd rounded, tips of rays free, lower 3-4 thick and short. Colour: dusky, uniform, or with many narrow angular cross bars. Males often with many dark dots on head, crest and P base, some females with dark lines over snout. Fins mainly dark or dusky, mid membranes of Cd transparent. 10 specimens, 50-90 mm., St. Pierre, La Digue and Silhouette Is., Seychelles, at small river mouths. Agile, difficult to catch. My specimens agree with the brief original description and figure of **anjouanae** — may finally prove identical with **monochrus** Blkr.

DAMANIA MONOCHRUS (Blkr.), 1869 (**Pl 19, H**). **Alticus monochrus** Blkr. 1869, 234: Bleeker & Pollen 1874, 60, Pl 16, f 2 (Madag.): Sauvage 1891, 391, Pl 39, f 2 (Mad.). **Salarias monochrus** Boulenger 1916, 111, f 67 (Reunion): Pellegrin 1933, 186, 101 (Madag.). **Alticus aspilus** Bleeker 1869, 235: Bleeker & Pollen 1875, 61, Pl 16, f 1: Sauvage 1891, 391, Pl 39, f 1 (Madag.). Not seen. D XIII-XIV 21-22. A 26-28. P 15. Depth 8, head 6 in body. Eye 4 in head, ½ eye apart. Male with high rounded crest, none in female. Snout rounded. Lips not crenulate(?). Lower canines in male. In male 2nd D spine longest, 1½ times head, soft fin height body depth, anal little lower, ends of rays free, last D & A ray free from body. In female (**aspilus**) fins lower, 1st D spine filiform, equals head. Ends of Cd rays free. Uniform dark, mid membrane of Cd transparent. To 110 mm. Madagascar, Reunion. Bleeker & Pollen 1875, 61 indicated **aspilus** as likely the female of **monochrus,** the data clearly point to this.

7. **Lophalticus** Smith, 1956.

Type **Salarias kirkii** Gnthr., 1868. Body elongate. Triangular nuchal crest. Ciliate cirrus at eye, none at nape. No canines. Teeth on vomer. P 14. V I 3. Cd rays simple, tips free. One species.

LOPHALTICUS KIRKI (Gnthr.), 1868 (**Pl 18, C,** male, Pinda. **D,** fem., Delgado). **Salarias kirkii** Gunther, 1868, 459: Sauvage 1891, Pl 26, f 1 (Zanz.): Borsieri 1904, 208 (Eritrea): Pellegrin 1914, 229 (Madag.). **Lophalticus kirki** Smith 1956, 889 (Aldabra). D XVI-XVII 20-22. A II 25-27. P 14. V I 3. C 11. Depth equals head, 6 in body. Eye 3½-4 in head, 4 times I-orb. Sexual dimorphism; males with higher crest and dorsal. Snout rounded, abrupt. High pointed crest from front of eye halfway to D origin, in male front edge more than twice eye, a small basal lobe behind; in female similar, but front edge not twice eye, no hind basal lobe. Nasal cirrus equals pupil, simple or with 1-3 cilia, that above eye ½-⅝ eye, margin with 4-8 cilia. Mouth inferior, in male to behind eye, in females less. Upper lip crenulate, lower smooth, few wide folds at side. A raised fleshy fold each side of chin. Patch of small conical teeth at vomer, no canines. No L.l., skin with dense multibranched sensory system. Front D rays highest, in males body depth, in females far less, spines less behind, in females edge of fin hardly convex, in males convex, notch before 2nd fin, in females 2nd fin higher than 1st, in males it is about as high as front of 1st fin. In females last D ray bound to body before Cd base, in males apex of last D ray reaches beyond Cd base. Anal lower than D, rays longer behind, last free. P not to anus, pelvics stout, about ½ head. Cd rounded. Colour: brownish, with many variable subangular narrow cross bars. D with many narrow dark stripes up and back, tips of spines and rays light. Anal basally dusky, a narrow dark line along middle of whole fin, margin light, P, Cd and pelvic dusky. Many specimens, 35-87 mm., north from about 17°S in E. Africa, and at all islands, mainly on coral rag, above water, preferably in shade, extremely agile, a comical fish.

8. **Entomacrodus** Gill, 1859.

Type **E. nigricans** Gill (= **vomerinus** Val., 1836). Rarely a nuchal crest. Nuchal cirrus simple, those at eye and nostril multifid. Lower canines, vomer toothed. V I 4. Less than 20 soft rays in D & A, front A rays in male swollen. Cd rays divided. All tropical seas, about 12 species, 2 in our area, easily distinguished.

ENTOMACRODUS VERMICULATUS (Valenciennes), 1836 (**Pl 18, L, M,** Mahe). **E. vermiculatus** Fourmanoir 1954, 206 (Comores): Smith 1956, 889 (Aldabra). **Salarias vermiculatus** Gunther 1861, 249: Playfair 1867, 863: Bleeker & Pollen 1875, 74: Day 1878, 335: Sauvage 1891, 386 (E. Af., Seych.): Pellegrin 1914, 229 (Madag.). **Salarias reuteri** Lenz 1881, 506 (Madag.). D XIII 15-16. A II 18. P 14. V I 4. 30-35 apically bispinate rakers. Depth 4-4½, head 4½. Eye 4-5½ in head, 1.1-3(juv.) times I-orb. L.l. bends below 7-8th D spine, along mid side to near Cd base. Snout rounded, sloping. Mouth inferior, to behind eye, upper lip crenulate, lower plain. Lower canine, small conical teeth on vomer. Nasal cirrus broad, 4-6 cilia, that above eye up to 1½ times eye, pointed, cilia both sides; that at nape flat, pointed, equals pupil. D spines subequal, deep notch, soft fin higher, last ray bound to Cd base. A lower, tips of rays and last ray free. P to or near A origin, pelvics broad, 1.4 in head. Cd rounded. Alive, yellow-brown, whole body with reticulations, in young irregular cross bars. Brown spots and bars on basically yellow head, light spots on cheek, blue marks about eye. D greenish yellow with darker stripes and light spots. A basally light, mottled, distally brown-yellow, tips of rays white. P dull yellow and white, 2 brown bars across base, pelvic light, Cd transparent, greenish with rows of brown spots. 40-120 mm., Pinda, Delgado, Mombasa, Aldabra, Seychelles, Ibo. One of largest and most agile, favours sterile reefs.

ENTOMACRODUS STRIATUS (Quoy & Gaimard), 1836 (**Pl 14, C,** male, St. Pierre). **Salarias striatus** (Q & G) in C & V, 1836, 309 (Reunion): Sauvage 1891, 385, Pl 41, f 9 (Mad.). **Salarias arenatus** Blkr. & Pollen 1875, 74: Blkr. 1879, 20 (Maur.). **Salarias frenatus** Guichenot 1863, 27: Sauvage 1891, 388, Pl 41A, f 5 (Reun. & Madag.). **Halmablennius marmoratus (non** Bennett) Smith 1949, 508, Pl 75, f 973a. D XIII 15 (14 or 16). A II 16(15 or 17). P 14. V I 4. 18-20 rakers. Depth 4½-5, head 4½ in body. Eye 4 in head, twice I-orb. No crest. Snout sloping. Nasal cirrus broad, 5-6 cilia, that at eye little less than eye, flat, pointed, 4-5 cilia on inner side, 2-3 on outer. Nuchal cirrus simple, pupil length. L.l. curved, ends on mid side at front of 2nd D. Mouth beyond eye, upper lip crenulate, 25-30 lappets, lower smooth, lower canines, fine teeth on vomer. 1st D lower than 2nd, deep notch, last ray bound over Cd base. A lower than D, tips of rays and last ray free. P to or near A origin, pelvic 1.3 in head, inner 2 rays small. Cd little rounded. Males have higher 2nd D, A spines free, those and often 1st ray thick, front of A dusky. Colour: as in Smith 1949, Pl 75, f 973a (fem.); preserved, (male) as in Pl 14. Many specimens, 25-90 mm., whole W. Ind. Ocean from Inhaca to N. Kenya and all islands to Seychelles, not abundant. My specimens agree closely with descriptions of those from Pacific. Difficult to understand how this fish could ever have been named **striatus.**

9. **Salarias** Cuvier, 1817.

Type **S. quadripennis** Cuv., 1817 (= **fasciatus** Bloch, 1786). Crest and small canine may be present. Cirri at nape, eye and nostril. Normally V I 2; D XII, not more than 20 rays in D2. Few front A rays markedly produced in males. Cd rays divided. Few species, 2 in our area.

I. Upper lip smooth. Nuchal cirrus bushy ..... **fasciatus**
II. Upper lip crenulate. Nuchal cirrus simple ..... **sinuosus indicus nov.**

SALARIAS FASCIATUS (Bloch), 1786 (**Pl 15, f 1,** male, Pinda). As **S. fasciatus** Bloch, and **S. quadripennis** Ruppell, many records from Kenya to Red Sea, Seychelles. **S. nitidus (non** Gunther) Fourmanoir 1954, 207 (Comores). **Blennius ornatus** Hemprich & Ehrenberg 1899, Pl 9, f 2 (Egypt). D XII 18-19(20). A II 19-21. V I 2 (rarely 3). Rakers 20-22. Depth 3-3¼, head 5. Eye 3 in head, 3 times concave I-orb. Forehead projects, no crest, nasal cirrus with 3-4 cilia, that at eye less than eye, 3-4 cilia. Nuchal cirrus broad, each with 10 or more cilia, more with age. L.l. gently curved, variable, may end below front of 2nd D or run faintly on above mid side. Mouth inferior, lips smooth, but each side lower lip ½ pupil size lappet. In males tiny lower canine. D spines subequal, 1st fin little lower in females, soft fin little higher, no true notch, last ray joined to Cd. A lower than D, males with front 3-5 rays elongate, with skinny flaps, last ray half joined to body. P to or near A origin, pelvics 1.1 in head. Cd rounded. Alive as Pl 15; preserved, variable; alcohol, yellow; formalin, darker, with 7 or 8 irregular reticulated cross bars, spots on shoulder, along back and on vertical fins, elongate oval marks on belly and flank. To 100 mm., Bazaruto north and all islands to Seychelles, favours weedy area, at times abundant, agile. We find a tiny hind canine in all males. Nuchal cirri and deep body indicate this as intermediate between the Salariinae and Cirripectinae.

Salarias sinuosus Snyder, 1908: **indicus n. subsp. (Pl 15, f 3,** male, Pinda).

S. sinuosus Snyder 1908, 109: also 1912, Pl 70, f 2. De Beaufort & Chapman 1951, 298, f 48. D XII 17 (rarely XIII 16). A II 17-18. P 14. Rakers 16-17. Depth equals head, 4½ in body. Eye 3⅓-3½ in head, 4 times I-orb. Nasal cirrus bifid, one at eye ½-1 eye, simple in young, divides with age, up to 4 cilia, nuchal cirri simple, pupil length. Forehead over snout or projects. 22-30 lappets on upper lip, lower smooth. Small lower canine. L.l. flat, ends below 11-12th D spine. 1st D lower than 2nd, well notched, last ray joined low down on Cd. In males A higher than D, 2-5th rays elongate, ends swollen, as also 5-9th rays. In females A lower than D, no long rays, half last ray joined to body. P not to A origin, pelvics ⅔ head. Cd convex in young, truncate with age. Alive as in Pl 15: preserved (alcohol), yellowish, 5-6 broad crossbars, in front run into reticulations on belly, 4 bars above anal, each with 2 lines below, and 2 black spots above, scattered spots below end of soft D and on peduncle. Dark blotch on opercle, lower part of head dusky, peritoneum black. Lower half of Cd dusky, spotted. D, A & V dusky, P light. In formalin, much darker. Many specimens, 30-65 mm., Pinda, Ibo, Delgado, Zanzibar, Shimoni, only in weedy or turbid areas. Very close to, here as subspecies distinct from, **sinuosus** Snyder, this before known only from central Pacific and nowhere between, mine differ in having 2-5th A spines elongate and in details of markings, at present held distinct. The type, male, 62 mm., Pinda. Preserved alcohol and formalin specimens strikingly different.

10. **Istiblennius** Whitley, 1943.

(**Alticops** Smith, 1948). Type **Salarias mulleri** Klunz., 1879. Crest may be present. Cirrus at eye and nostril, that at eye simple, or at most divided at end, not fimbriate, one at nape may be present. V I 3. D XIII-XIV 18-21. Front A rays not elongate in males. Cd rays divided. An uneasy array of different types ranging over whole Indo-Pacific. 6 species in our area.

A. No tentacle on nape:
  I. Both lips distinctly crenulate. No canines. Crest and blue spots on head in males ..... **bellus impudens nov.**
  II. Both lips smooth. Lower canines:
    (a) Nuchal crest in both sexes. At least some fine dark lines along body. **andamanensis**
    (b) No crest. No distinct dark lines along body. Distinct dark spot between 1-2 D spines ..... **gibbifrons insolitus nov.**

B. Tentacle on nape :
  I. Both lips smooth, no canines. Males with strong crest ..... **edentulus**
  II. Upper lip crenulate, small canines. Males with low ridge-like crest :
    a. No marked spots on head, blue spots on each cross bar ..... **periophthalmus**
    b. Orange and red spots on head and body ..... **chrysospilus insulinus nov**

Istiblennius bellus impudens nov. (**Pl 16, f 1,** male, St. Pierre. **Pl 14, M,** fem., Inhambane).

Salarias bellus de Beaufort & Chapman 1951, 304 (Zanz., Mozb., Seych.). **Alticops edentulus** (**non** Bloch) Smith 1949, 348, Pl 75, f 971 (fem., Zululand). D XIII 20-21. A II 20-22. P 14. 23-25 gillrakers. Depth equals head, about 4½ in body. Eye 3-5 in head, 3 times I-orb. Snout rounded. Marked, rounded, up to more than eye height crest in males only, not to D origin, low ridge in big females. Nasal cirrus small, with 2-3 cirri, that above eye simple, ½-1 eye length. No nuchal cirrus. Both lips finely crenulate, no canines. L.l. curves up, then flat, bends at 8-9th D spine, runs along mid side, first as tubes, then as vague pores to near Cd base. 1st D rounded, in large males as high as body depth, hinder spines less, deep notch. 2nd fin almost as high as 1st, last ray joined to accessory Cd rays. In females, fin similar but lower, about ½ body height. A in males more than ½ body depth, less in females, last ray free. P about 1.5 in head. 1st pelvic spine thick. Cd rounded. Alive, males as Pl 16, females as Smith 1949, Pl 75, f 971. Preserved; males, mostly uniform, in some, crossbars remain, always remains of blue spots on head, especially oblique series from nape to mouth, mostly similar spots on hind part of body. Some females show remains of crossbars; but fine spotting on hind part of body and vertical fins distinct. Many specimens, 50-180 mm., Pinda, Delgado, Shimoni, Kenya, many from Juan de Nova and St. Pierre Isls., one of largest species, very agile. While our specimens are close to **bellus** Gunther, 1861, the type stated to be from China, they differ somewhat. de Beaufort and Chapman 1951, 305, state type series of **bellus** in Brit. Museum found to contain 3 separate species, and they deduced one was the type. No previous accounts of live colours of **bellus.** In these circumstances the W.Ind.Ocean form is kept subspecifically distinct. Type, male, 125 mm., St. Pierre Isl.

ISTIBLENNIUS ANDAMANENSIS (Day), 1869 (**Pl 16, f 7,** fem., Ibo). **S. andamanensis** Day 1869, 611 (Andamans). **S. striolatus** Day 1876, 332 (India). **S. caudolineatus** (**non** Gunther) Pfeffer 1893, 15 (E. Af.). **S. cyanostigma** (**non** Blkr.) Pfeffer 1893, 15 (Red Sea).

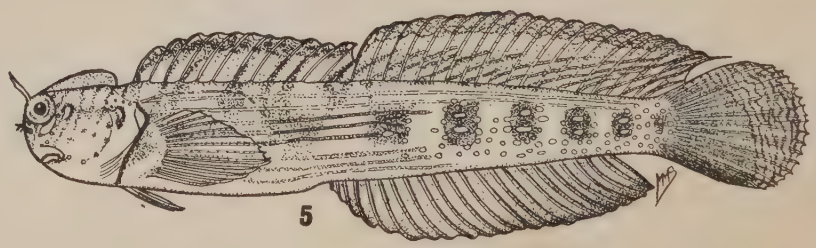

Fig. 5. **Istiblennius andamanensis** (Day). Male, 84 mm., Pinda.

D XIII-XIV 20-21. A II 20-21. P 14. 15-16 apically bispinate gillrakers. Depth 6, head 5½ in body. Eye 4 in head, 3 times I-orb. Forehead projects. Crest in both sexes, male from eye almost to D origin, rounded, almost eye height, in females lower, to pupil height. Nasal tentacle pupil length, 3-4 cirri, that above eye simple, ½-1 eye length, none at nape. Mouth inferior, both lips smooth, small lower canines. L.l. little curved, bends below 8th D spine, 3 tubes on slope, rest as faint pits to near Cd base. D spines low, subequal, last short, deep notch, soft fin higher, last ray joined over Cd base. A lower, in males almost equals soft D, in females lower, last ray free. P 1.1, pelvic 2 in head, 2nd ray longest. Cd rounded. Alive: females as Pl 16, male similar, but with more prominent bars on mid side, each with 2-3 blue spots. Preserved: females, colours faded, lines and dark spots much as in Pl 16. Males mostly uniform, in some, 7-8 dark bars along lower mid side, last at Cd base, each with 2-3 dark spots, blue in life. 3-4 dusky lines on mid side from P tip to above front part of A, vertical fins dusky, soft D with oblique streaks, Cd with spots above and dusky marks below, A dusky, margin darker. A dark mark behind eye and one on opercle. Many specimens, 30-95 mm., females usually smaller, from Bazaruto north to Malindi and all islands to Seychelles. While close to **cyanostigma** Blkr., I find females in our area constantly differ from typical Pacific form, notably in 5-6 distinct continuous lines along most of body. Apparently applies to all Indian Ocean specimens and Day's name is used here. Klunzinger 1871, 490 described **cyanostigma** from Red Sea, but his specimens were not that species, more likely **periophthalmus** Val., 1836.

Istiblennius gibbifrons insolitus nov. (**Pl 16, f 2,** Type).

Alticops gibbifrons (**non** Q & G) Smith 1949, 508, Pl 75, f 970a (fem.). D (XII)XIII 18-20. A II 18-20. P 14. Depth equals head, 4.6-5 in body. Eye 3.5-4 in head, 3 times I-orb. Snout vertical, or forehead protrudes. No crest. Nasal cirrus with 3-4 cirri, that at eye simple, ½-⅔ eye, none at nape. Both lips smooth, pupil length lower canine. L.l. double pores, flat curve, ends below 11th D spine, rarely 2-3 tubes below end. 1st D lower than 2nd, deeply notched, membrane from last ray not to Cd. A lower than 2nd D. P not to A origin, less than head. P 1.5-1.7 in head. Cd rounded to almost truncate. Both sexes basically

PLATE 17

1. *Omobranchus elongatus* Peters, 50mm. 2. *Laiphognathus multimaculatus* Smith, type, 45mm. 3. *Blennechis filamentosus* Cuvier, 41mm. 4. *Petroscirtes pindae n. sp.*, type, 42mm. 5. *Cirripectus perustus n. sp.*, type, 89mm. 6. *Aspidontus fluctuans* (Weber), 82mm. 7. *Runula rhinorhynchos* (Blkr), 79mm. 8. *Meiacanthus mossambicus n. sp.*, type, 79mm. 9. *Omobranchus mekranensis* (Regan), 52 mm. 10. *Aspidontus wamiziensis n. sp.*, type, 85mm. 11 & 12. *Exallias brevis* Kner. 11, 54mm.; 12, 90mm. 13. *Stanulus seychellensis n. sp.*, type, 35mm. 14. *Aspidontus tractus* Fowler, 114mm.

green, differ in markings, see Smith 1949, f 970a (fem.) and Pl 16, f 2 (male). Rare in W.Ind.Ocean, Inhambane, Moz. Isl., Pinda, Aldabra, Assumption, 7 females, 2 males, 35-98 mm. Type, male, 80 mm., Assumption. Earlier named as **gibbifrons** Q & G 1824, differs in fewer rays in D & A, shorter P, that fin not spotted, and general markings, probably merits full specific distinction. Strasburg 1956, 254 gives opinion that true **gibbifrons** Q & G occurs only in the Hawaiian region.

ISTIBLENNIUS EDENTULUS (Schneider), 1801 (**Pl 14, G**, male, Inhambane). As **Salarias** or **Alticops edentulus; quadricornis; rivulatus;** records from Kenya north over whole W. Ind. Ocean. **Alticops oryx** Smith 1949, 349, Pl 75, f 972 (Mozam.); Fourmanoir 1952, 169 (Comores).

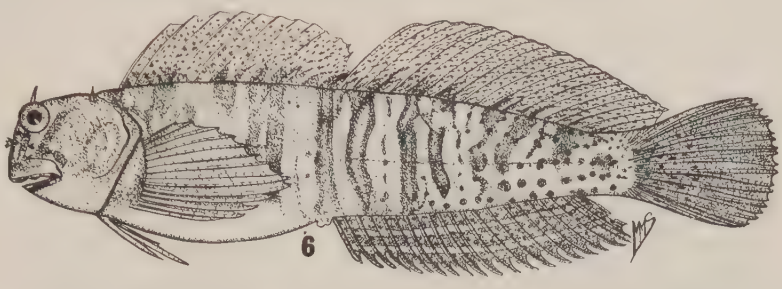

Fig. 6. **Istiblennius edentulus** (Schn.), 120 mm., fem., Juan de Nova.

D XIII 19-21. A II 20-23. P 14. 20-23 gillrakers. Depth equals head, 4½-5 in body. Eye 4 in head, 1½-2½ times I-orb. Snout rounded. Crest in males only, rounded, eye height, not to D origin. Nasal cirrus with 3-5 cirri, that at eye simple, about equals eye; that at nape 1-1½ times pupil. Mouth inferior, both lips smooth, no canine. L.l. flat, bends below 10th D spine, distinct to near Cd base. 1st D lower than 2nd, deep notch; in males, 1st D 3/5 body depth, 2nd ¾, in females both little lower. In males with age last ray joined well up Cd, females not so far. A lower than 2nd D, lower in females. P equals head, pelvics 1.5 in head. Cd rounded. Alive, males much as Smith 1949, Pl 75, f 972, females similar basically, but hind part of body and vertical fins with closeset tiny brown spots. Preserved, most markings faded, in males lines on fins, in females, spots distinct. Many specimens, to 160 mm., 33°S in S. Africa over whole W. Ind. Ocean to Seychelles, one of most abundant, agile. My specimens agree with descriptions from Pacific.

ISTIBLENNIUS PERIOPHTHALMUS (Valenciennes), 1836 (**Pl 14, B,** male, Pinda). As **Alticops** or **Salarias periophthalmus,** many records over much of W. Ind. Ocean from Natal to Red Sea, Smith 1949, 348, Pl 75, f 970. **S. cyanostigma (non** Blkr.) Klunz., 1871, 490 (Red Sea). D XIII 19-21. A II 20-22. P 14. 19-20 apically bispinate rakers. Depth equals head, 5¼-6. Eye 4 in head, twice I-orb. Low ridge behind eye as crest in male, none in females. Forehead protrudes. Nasal cirrus with 4-6 cilia, exceeds pupil, that at eye simple, slender, ½-¾ eye, that at nape less than pupil, L.l. little curved, bends below 9th D spine, ends on mid side. Mouth inferior, to behind eye, upper lip finely crenulate, lower smooth, small canine both sexes. 1st D lower than 2nd, deep notch, 2nd D higher in males, hind rays body depth, last ray bound to Cd base. A lower than 2nd D, higher in males, ⅔ body depth, last ray may be double, free. P 1.1-1.2, pelvic 1.5 in head. Cd truncate. Alive, male, as in Smith 1949, Pl 75, f 970 (Moz.); female, similar, but most of body with closeset fine red-brown spots. Margin of A variably dusky, also Cd. Pattern generally uniform, in males, 1st D variably with large red-brown spots, or mottled. Preserved: male, vague crossbars, each with 2-3 oval blue spots, faint traces of dark markings as in Smith 1949, Pl 75, margin of A and lower Cd lobe black. Females, uniform, traces of crossbars, each with 2 oval spots, hind part of body with tiny dark spots, A margin dark. Many specimens, to 150 mm., from 30°S north over whole W. Ind. Ocean, not uncommon, agile. Appears similar to Pacific specimens.

Istiblennius chrysospilos insulinus nov. (Pl 16, fs 4, 5, Aldabra).

Salarias chrysospilos de Beaufort & Chapman 1951, 307. D XIII 18-20. A II 20-21. P 14. 18-19 apically bispinate rakers. Depth 5½, head 5. Eye 3¾ in head, 3 times I-orb. Forehead to beyond snout. Eyes above dorsal profile. Males with low fold of skin on occiput as crest, none in females. Nasal cirrus pupil length, 4-6 cilia, that at eye bladelike, up to eye length, base simple, no cilia on sides, apex may be divided, possibly damage. Small cirrus, ½ pupil length on nape, may seem absent but base visible. Mouth to behind eye, upper lip variably crenulate, either almost smooth, crenulae scarcely visible, or fine crenulae over whole length. Curved lower canines almost ½ eye. L.l. gently curved, bends below 10th D spine, few tubes on slope, then weak pits almost to Cd base. D spines subequal from 2nd, 1st short, hidden, deep notch, in males height ¾ body depth, in females about ½, 2nd fin higher than 1st, in males almost body depth, last ray with age joined at Cd base, in young before. In males A in front as high as soft D, front rays deeply incised, shorter behind, last free. P 1.0-1.2, pelvic 1.5 in head. Cd truncate to emarginate. Alive: As Pl 16. Preserved; yellowish, faint light spots on head, vague dark mark on cheek behind eye. D spine tips black, A dusky, tips darker, upper edge and lower ⅓ of Cd dusky, lower part of P and pelvic dusky. Many specimens, 45-130 mm., Ibo, Zanzibar, Shimoni, Malindi, Aldabra, Assumption, Seychelles. Type, female, 96 mm., androtype, male, 130 mm., both Aldabra. Close to **chrysospilos** Blkr., from C. Pacific, African form likely merits

full specific distinction, as nuchal tentacle always present, males have deep A, at least body depth, none with spots on P and only rarely traces of black spot on side, also the upper lip is very feebly crenulate.

11. **Halmablennius** Smith, 1948.

Type **Salarias unicolor** Ruppell, 1835. Crest, and cirrus at nape may be present, cirri at eye and nostril, that at eye ciliate. Small canine may be present. V I 3. D XIII-XIV 18-24. Front A rays not longer in males. Cd rays divided. 4 species in our area.

A. Both lips smooth :
   I. Forehead prominent. Males with dark edges to D & Cd. ..... **dussumieri**
   II. Forehead not prominent. Males not as in I ..... **striatomaculatus**
B. Upper lip crenulate :
   I. Lower lip smooth, 24-26 total A rays ..... **lineatus**
   II. Lower lip crenulate. 18-21 total A rays ..... **flaviumbrinus**

HALMABLENNIUS DUSSUMIERI (Valenciennes), 1836. **Salarias oortii** Regan 1908, 254 (Rec.). Hornell & du Pont 1927 (40), 233 (Seych.).

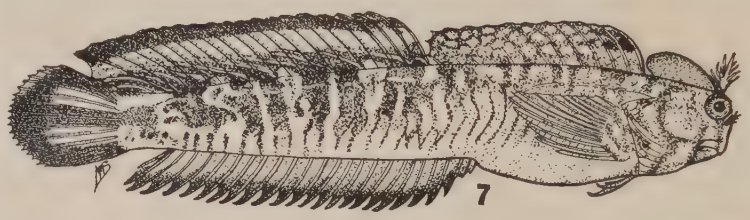

Fig. 7. **Halmablennius dussumieri** (Val.). Male, 120 mm., Silhouette.

D XIII 21. A II 23-24. P 14. 15 gillrakers. Depth 6, head 5 in body. Eye 4 in head, 4 times I-orb. Forehead projects. Male with crest from between eye, sometimes to D origin, up to half eye height, some females with low skinny ridge. Nasal cirrus with 3-4 cilia, that at eye flat, with 3-5 cilia each side, less than eye in female, more than eye in male, none at nape. L.l. little curved, bends below 9th D spine, thence as pits almost to Cd base. Mouth to behind eye, lips smooth, males with tiny stumpy lower hidden canine behind. D origin over end of opercle, spines subequal, 1st fin lower than 2nd, deep notch, soft fin equals body depth, in large males last ray joined half-way along Cd lobe, in females over base of Cd. A lower than D, last ray free. P 1, pelvic 2 in head. Live colour, males; olive with reddish cross bars, vertical fins wine red with dark marks as shown. Females, vertical fins spotted, many fine cross bars and spots. Many specimens, 25-130 mm., from Seychelles group. Extremely agile, difficult to capture. This species not certainly found on the E. coast of Africa, appears to differ constantly from **striatomaculatus** Kner, in more prominent forehead and in the strongly marked males, the black edged wine-red vertical fins especially notable. I suspect that careful examination will show all males have the tiny hidden lower canines found in mine.

HALMABLENNIUS STRIATOMACULATUS (Kner), 1866 (**Pl 14, A,** fem., Inhaca). As **Salarias** or **Halmablennius** or **Blennoides dussumieri** or **oortii** or **striatomaculatus** or **steindachneri,** numerous records over whole W. Ind. Ocean from 30°S in S. Africa. Smith 1949, 349, Pl 74, f 975, m & f. D XIII 20-22. A II 21-23. P 14. V I 3. 16 small gillrakers. Depth 5½, head 5. Eye 4 in head, 4 times I-orb. Snout sloping, males with moderate crest from between eyes about ¾ eye height, ends near D. Nasal cirrus small, with 3-5 cilia : that above eye less than eye in females, up to longer than eye in males, with 5 or 6 cilia each side; none at nape. L.l. little curved, bends below 8-9th D ray, runs along mid side as pores almost to Cd base. Mouth to hind margin eye, lips smooth, males with tiny lower canine. In males D slightly higher, last spine short, deep notch, 2nd D in males equals body depth, last ray joined well up Cd, in females lower, joined over Cd base. A lower than D, little higher in males, tips of rays and last ray free. P not to A origin, pelvic 1.6 in head, Cd rounded. Sexes differ somewhat in colour, see Smith 1949, Pl 74, f 975. Fins spotted in females, but in males these tend to form lines. Preserved: much the same, fins more spotted in females, in male 2 dark spots between 1-3rd D spines, only faint blotch in females, latter with many pairs of vertical dark lines on body, black spots on peduncle. Male with broader bars in young and fewer spots, in larger fishes markings mostly faded. To 120 mm. From 32°S in S. Africa north, abundant in Zululand and Mozamb., less common in Kenya, sometimes found at nearby islands. Earlier as **dussumieri** Val., this African form seems to merit distinction.

HALMABLENNIUS LINEATUS (Valenciennes), 1836. **Salarias lineatus** Day 1878, 332, Pl 70, f 8 ; Giglioli 1888, 70 (Red Sea); ; Pellegrin 1904, 543 (Somalil.); and 1914, 229 (Madag); Tortonese 1941, 3 (Somalil.). **Halmablennius lineatus** Smith 1956, 888 (Ald.). **Salarias steindachneri** Pfeffer 1893, 143, Pl 3, f 3 ; Jatzow & Lenz 1898, 514 (E.Afr.).

D XIII 22-24. A II 23-24. P 14. V I 3. 18 gillrakers. Depth equals head, 5½-6. Eye 4 in head, twice I-orb. Large rounded crest in males, from eye to D origin, lobe often beyond, height up to twice eye. Some females with low skinny ridge, most none. Nasal cirrus short, flat, 5-8 cilia, that at eye leaflike, in females less than eye, in males up to eye length, 3-6 cilia. L.l. little curved, bends below 9th D spine, runs as few faint pits along side. Mouth to behind eye, 22-24 crenulae in upper lip, hind end smooth, lower lip smooth,

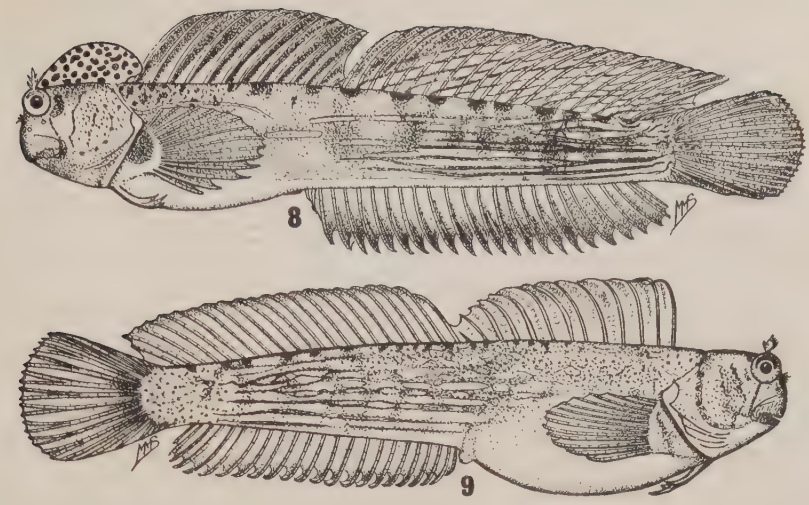

Fig. 8-9. **Halmablennius lineatus** (Val.). 8 : male, 146 mm., Juan de Nova. 9 : fem., 105 mm., Delgado.

no canines. D origin over opercle, in male height up to body depth, spines little higher in front, less behind, deep notch, last soft ray joined well up on Cd. In females, 1st D higher in front, higher than 2nd fin, about ½ body depth, deep notch, last ray joined over Cd base. Anal in males higher than in females, tips of rays and last ray free. P 1.2, pelvics 2 in head, 1st ray thick. Cd rounded. Alive: dull, dusky, with odd olive and reddish shades, marked as shown in fig. often distinct cross bars, fade quickly after death, crest distinctly spotted; preserved, similar. 12 specimens, 60-160 mm., Delgado, Juan de Nova Isl., rare in W. Ind. Ocean, I can find nothing in my specimens to merit distinction for W. Ind. Ocean form.

HALMABLENNIUS FLAVIUMBRINUS (Ruppell), 1828 (**Pl 14, N,** Inhaca). **Salarias flaviumbrinus** Ruppell 1828, 113 : and 1835, 135, Pl 32, f 1 ; Gunther 1861, 241 ; Klunzinger 1871, 489 (Red Sea). **Blennius dama** Hemprich & Ehrenberg 1899, Pl 9, f 3 (Red Sea). **Salarias** or **Halmablennius unicolor** Ruppell 1835, 136 (Red Sea); and numerous other records over whole W. Ind. Ocean. **Halmablennius sp.** Fourmanoir 1954, 206, f 3 (Comores). **Halmablennius unicolor** Smith 1949, 349, Pl 75, f 973. D XIII 17-19. A II 16-19. P 14. V I 3. 24 gillrakers. Depth equals head, 5 in body. Eye 4-5 in head, 2½ times interorbital. Snout sloping. Variably strong rounded crest in males only. Nasal cirrus palmate, with 4-9 cilia, that at eye longer than eye in male, cilia both sides. No nuchal cirrus. Upper lip strongly crenulate, lower weakly, no canines. L.l. flat curve, bends down below 9th D spine, runs as pores along mid side almost to Cd base. 1st D lower than 2nd, deep notch; in females last ray joined low on Cd, in males along upper lobe. A lower than D, 1st ray often double, free. P not to A origin. Cd rounded. Alive: males as in Smith 1949, Pl 75; females, much the same. Preserved; alcohol; something like live fish; formalin, almost uniform, dark spot behind eye. Many specimens, 30-120 mm., Inhaca to Shimoni, and all islands to Seychelles, mainly tidal pools. **unicolor** Rupp., 1835 has been kept distinct from **flaviumbrinus** Rupp., 1828 because latter said to have only upper lip crenulate and no notch in D. However, Dr. E. Trewavas has kindly informed me that, in **flaviumbrinus,** both lips are crenulate and D is notched. My preserved specimens agree exactly with **unicolor,** but live fishes are marked like **flaviumbrinus,** I suspect the latter was preserved differently.

12. **Ecsenius** McCulloch, 1923.

Chapman & Schultz 1952, 507 (review). Type **E. mandibularis** McCulloch, 1923. Forehead prominent. No crest. Small nasal cirrus, none at eye or nape. Upper teeth fine, movable, 45-50 firm lower teeth, small lower canine. Cd rays simple. V I 3. Indo-Pacific, about 10 species, 4 in our area.

A. P 13. D XII 14 ..... **nalolo**

B. P 14-15. D XII-XIII 17-19 :

1. Uniform brown ..... **frontalis**
2. Black band along D ..... **gravieri**
3. Black bar from end P to Cd base ..... **nigrovittatus**

Ecsenius nalolo n. sp.

D XII 14. A II 16. P 13. 12 low rakers. Depth 4, head 3¾ in body. Eye 3½ in head, 3 times I-orb. Forehead projects. Mouth to beyond eye, upper teeth fine, movable, lower larger, small lower canine, vomer edentate. Nasal cirrus equals pupil, rarely bifid. D deeply notched, soft fin little higher, A lower than 2nd D, ray tips free, last D & A ray bound to body before Cd base. L.l. gently curved, pores above and below, ends below last D spines. P to or near A origin, pelvic 1.4 in head. Cd truncate, tips of rays free. Alive: brownish, marked as shown, chin and throat either black, with white half-circle behind black bar on lower lip, or lighter, with dark stripe back and up each side from mid chin. 10 specimens, 30-50 mm., Pinda (Moz),

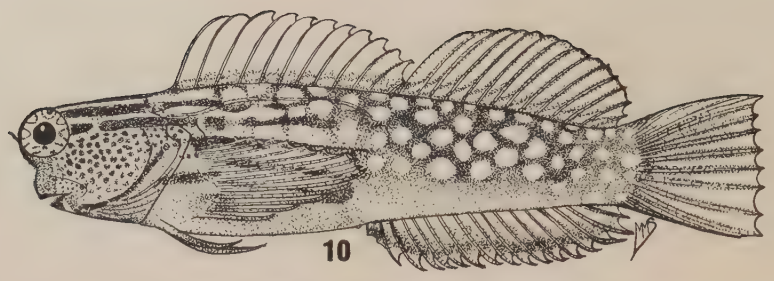

Fig. 10. **Ecsenius nalolo n. sp.** Type, 50 mm.

type, male, 50 mm. Close to, possibly a W. Ind. Ocean subsp. of **opsifrontalis** Chapman & Schultz, 1952, Marshall Isl., Pacific, (only 2 specimens 26-31 mm.), **nalolo** differs in bold markings and always one ray more in D & A. Nalolo is Pinda local native name for small Salariids.

ECSENIUS FRONTALIS (Valenciennes) 1836. **Salarias frontalis** C & V 1836, 328. Bamber 1915, 484, Pl 46, f 1 (Red Sea). Not seen. D XII 17-19. A II 18-20. P 15. Depth 4.7-5 ; head 4.6-4.8 in body. Nasal cirrus equals eye. Forehead may project. 45-50 fixed lower teeth, 1-2 tiny lower canines each side. D increases in height to mid soft rays, no notch, free from Cd. Anal rays of male enlarged at tip. Upper and lower rays of Cd extended. P and pelvics short of anal. Uniform brown, attains 70 mm. Red Sea, India, East Indies, Pacific. Clearly rare, we found none in W. Ind. Ocean.

Fig. 11. **Ecsenius frontalis** (Val.). After Bamber.

ECSENIUS GRAVIERI (Pellegrin), 1906. **Salarias gravieri** Pellegrin 1906, 93 (Red Sea).

Fig. 12. **Ecsenius gravieri** (Pell.). Type, 75 mm.

D XIII 18. A II 20. P 14. Depth equals head, 4.5 in body. Eye 4 in head, I-orb $\frac{2}{3}$ eye. Snout vertical. Nasal cirrus $\frac{1}{3}$ eye. L.l. ends below 9-10th D spine. About 48 lower teeth, small canine behind. Preserved, light brown, marked as shown. Described from the type, only known specimen, P.M., 04-319, kindly lent by Dr. J. Guibe, 55 mm. standard length, 75 mm. total, from Djibouti. Chapman & Schultz 1952, 513 examined this type, but their account differs from what I observe, e.g. they state: "length 53 mm.; D XII 18. P 15. All D spines excised; upper and lower 2 principal caudal rays extended by length equal $\frac{2}{3}$ mid rays." I find Pellegrin's original data, viz. "body 55 mm., total 75 mm., D XIII 18. P 14;" to be correct, and the statements about D and Cd by Chapman and Schultz not correct, fig. 12 shows what we observe, including dark blotch behind eye.

ECSENIUS NIGROVITTATUS (Ruppell), 1835. **Salarias nigrovittatus** Ruppell, 1835, 136. Gunther 1861, 245. Klunz., 1871, 490 (Red Sea). Not seen. D 30(XII 18?). A 19. No crest or cirri. Forehead prominent. Large eye. Lips smooth, no canines. D not notched. L.l. on front 3rd of body. Grey brown, head darker; from end P to Cd base a dark stripe. Only the type, 30 mm., from Red Sea.

13. Stanulus nov.

Type **S. seychellensis n. sp.** More than 100 flexible teeth above, about 80 below, large lower canine. Small nasal and nuchal cirri, none at eye. D & A short, free from Cd. 9 Cd rays forked. P 15. V I 3. L.l. almost complete. With short body and general features merits full generic rank.

Stanulus seychellensis n. sp. (Pl 17, f 13).

D XII 10. A II 11. P 15. V I 3. Depth 3.5, head 3.2 in body. Eye 5 in head, I-orb $\frac{1}{4}$ eye. Small simple front nasal cirrus, one, pupil size, each side nape, none at eye. Mouth inferior, lips smooth, more than 100 flexible upper teeth, lower rather larger, less flexible, about 80 total. Curved lower canine, 3/5 eye,

each side. Deep notch in D, 12th spine minute, hidden. 1st 2 A spines swollen apically, D & A end far from Cd. L.l. not curved, bends below P and runs as separate tubes along mid side to near Cd base. Alive as Pl 17 ; preserved, light brown, with odd dark marks. Only the male, type, 34 mm., from coral at La Digue, Seych.

14. **Hirculops nov.**

Type **Blennius cornifer** Ruppell, 1828. No crest. Simple cirri, on nape flaplike, above eye long, at nostril small. Teeth few, little movable, hinder recurved, lower canines, few stout low conical teeth on vomer. D little notched. Differs from other related genera chiefly in dentate vomer. 2 subspecies.

HIRCULOPS CORNIFER CORNIFER (Ruppell), 1828. **Blennius cornifer** Ruppell, 1828, 112; and 1835, 133. Gunther 1861, 214. Klunz. 1871, 493. Steinitz and Ben-Tuvia 1955, 8 (All Red Sea). Not seen. D XII 20. A 25. Snout blunt. No canine. D deeply notched. Cirrus at eye up to twice eye. Olive, brown spots or bars, often divided below, 4-5 rows of blue stripes along body, white dots on head and P base. Cirrus at eye green, red edge. Dark spot in front of D, this yellow with white spots and brown marks, blue spots on A, tips white, Cd greenish with white spots, hind edge red. 50 mm. Coral. Rare.

Hirculops cornifer menos n. subsp. (**Pl 16, f 6**, fem., Moz. **Pl 19, G**, male, Shimoni).

Rhabdoblennius cornifer de Beaufort & Chapman 1951, 348 (E. Indies). D XII 19-20. A II 20-21 (rarely 22). P 14. V I 3. Depth 4¾-5, head 4½-5 in body. Eye about 3¼ in head, 4 times bony I-orb. Snout subvertical or concave. No crest. Pupil length flat cirri at nape and nostril, at eye simple cirrus, tip rarely divided, little exceeds eye in females, almost twice eye in males, resemble antelope horns. Mouth below middle or hind part of eye, 35-40 upper teeth, lateral smaller, lower teeth larger, 25-30, increase to side, tip recurved, small canine behind. Group of fine conical teeth on vomer. L.l. flat, bends below 8-9th D spine, along mid side few pores, ends below front of 2nd D. In females, 1st D lower than 2nd, moderate notch, A lower. Males, 1st D higher than 2nd, front spines longest, narrow skinny flange along front of 1st spine, slight notch, last D & A ray bound to base of Cd or little beyond. P to near A origin in females, little beyond in males. Pelvic 1.5 in head. Cd rounded — truncate. Alive, Pl 16 ; preserved, Pl 19, sexes alike except marks at front of D plainer in males. Many specimens, 25-75 mm., Inhaca Is., north to Zanzibar and Kenya. Agrees broadly with diagnoses of Ruppell and Klunzinger, but both state A 25, my specimens show A II 20-21, only 2 have A II 22. de Beaufort and Chapman 1951, 348, record 26 mm. fish from E. Indies, also has A II 21. My specimens differ in certain markings from Klunzinger's detailed notes, and as Red Sea forms are quite often unique, the African form here kept subspecifically distinct. Type, fem., 60 mm., from Moz. Isl.

15. **Croaltus n. g.**

Type **Blennius bifilum** Gunther, 1861. No crest, no ocular cirrus, pair on nape longer than nasal, both simple. Less than 40 fixed teeth in each jaw, no canines. Caudal rays forked. One species.

CROALTUS BIFILUM (Gnthr.), 1861 (**Pl 14, F,** Pt. St. Johns). **Antennablennius bifilum** Smith 1949, 348, Pl 76, f 967 (S.E. Africa). D XI-XII 17-20. A II 17-21. P 14. V I 3. 12 rakers. Depth 5, head 4½ in body. Eye 4 in head, twice I-orb. Nasal cirrus ½-1 pupil, nuchal cirri 1-2½ times eye, mostly but not always longer in males. Snout vertical to sloping, muzzle may protrude. Mouth to below front of eye, 25-30 lower, 30-36 upper teeth, no canines, vomer edentate. Lower lip with short flap at side, throat behind this wrinkled. L.l. little curved, bends below 6th D spine, ends on mid side below last D spine. D origin over opercle, spines subequal or shorten behind, fin varies lower than 2nd D to almost as high, may have slight notch, last soft ray bound to accessory Cd rays or not so far. Anal lower than D, 1st spine in females hidden, last ray shortly bound to body. P to or near A origin. Pelvics 1.2 in head. Cd almost truncate. Alive, greenish, as shown in Smith 1949, Pl 76, often blue spots either over whole side, or in groups over the cross bars. Preserved, as in Pl 14. Many specimens, to 80 mm., mature at 25 mm., males greatly outnumber females. Earlier known only from S. Africa, now found up to Malindi, Kenya, with a curious 1,000 mile break from Inhaca Is. to near Cape Delgado, in which we found none, but those both sides this appear identical. An 80 mm. male specimen of **persicus** Regan, 1905, Persian Gulf, kindly lent by Dr. E. Trewavas, agrees in every respect, even in number of teeth, with E. Africa fishes, differs only in few blue spots on hind side of head, not visible in my specimens, as often in African males has light bars across the belly.

16. **Antennablennius** Fowler, 1931.

Type **Blennius hypenetes** Klunzinger, 1871. Nuchal crest may be present. No cirrus at eye, that at nostril longer than one at nape. Teeth barely movable, 25-35 in each jaw, no or feeble canines. Dorsal rarely deeply notched, 12 spines, sometimes a flap on 1st. V I 3. 7 species, W. Indian Ocean only. Appear to fall into 2 subgenera, as follows :

A. 1st D spine normal ..... **Antennablennius**
B. Skinny flap on front of 1st D spine of males at least ..... **Litanchus nov.**

Subgenus **Antennablennius** Klunz., type **Blennius hypenetes** Klunz.

A. At least male with occipital crest :
   I. Crest single ..... **hypenetes**
   II. Crest double ..... **simonyi**

B. No crest in either sex :
  I. Nasal cirrus in female not to mouth. A II 17-18 ..... **australis**
  II. Nasal cirrus always to mouth. A II 21 ..... **variopunctatus**

Subgenus **Litanchus nov.** Type **Antennablennius (L) velifer n. sp.**

A. Nasal cirrus beyond mouth. D XII 20-21 ..... **velifer n. sp.**
B. Nasal cirrus not to mouth. D XII 17-18 ..... **adenensis**

Subgenus **Antennablennius**

ANTENNABLENNIUS (A) HYPENETES (Klunzinger), 1871. **Blennius hypenetes** Klunz., 1871, 492 ; Steinitz & Ben-Tuvia 1955, 8 (Red Sea). **Rhabdoblennius hypenetes** Roux-Esteve & Fourmanoir 1955, 200. Roux-Esteve 1956, 96 (Red Sea, Rec. only). **A. hypenetes** Fraser-Brunner 1951, 216, f 3 (composite with **velifer n. sp.**).

Fig. 13. **Antennablennius (A) hypenetes** (Klunz.), 52 mm.

D XII 18. A II 19. P 14. Depth 5½, head 5 in body. Eye 3½ in head, I-orb ⅓ eye. Snout almost vertical. Crest on head from before front of pupil, nasal cirrus fleshy, apex below mouth. Mouth to below mid eye, no canines. L.l. separate pores, little curved in front, bends below 6th D spine to mid side, ends before 10th D spine. 1st D higher in front, 12th spine short, hidden, mid rays longest, last bound to base of accessory Cd rays. Anal lower than D, last ray bound to body. P to A origin, pelvic not half-way to anus. Cd rounded. Colour: preserved, brownish. Alive, after Klunzinger, grey, with red-brown cross bars and fine brown spots, 2-3 rows of blue spots along hind part of body. Crest, nasal cirrus and spot on throat yellow, pelvics green. Anal yellow, margin dark, Cd hyaline, margin blue-black. Klunzinger states the fish leaves the water and very active. 2 specimens from tide pools, Aden, determined by Fraser-Brunner as **hypenetes** Klunz., were kindly lent by Dr. E. Trewavas, but the 2 are different, one, 52 mm., is clearly **hypenetes** Klunz., and is described above, the other is **velifer n. sp.** described below. Fraser-Brunner (1951 above) failed to recognise that he had 2 species—his fig. 3 (**hypenetes sic**) is a composite, the crest, head and soft dorsal are **hypenetes,** but spinous D fin, belly spots and dark front of anal are those of **velifer n. sp.**

ANTENNABLENNIUS (A) SIMONYI (Stndr.) 1902(07). **Salarias simonyi** Steindachner 1902, 148, Pl 1, f 2 (Arabia). **Antennablennius girad** Fraser-Brunner 1951, 217, f 4 (Aden-Persian Gulf).

Fig. 14. **Antennablennius (A) simonyi** (Stndr.). After Fraser-Brunner.

Not seen. D XII 18-20. A 21-23. P 14. Depth 5½, head 4½ in body, eye 3½-4 in head. Nuchal crest double, from front of eye to half-way to D origin. Nuchal cirrus less than pupil, nasal cirrus twice as long, not to mouth. P to A origin, pelvic short. Colour: live, unknown; preserved, as in fig. 14. Attains 50 mm., Arabia, Persian Gulf, Aden, not yet found south of Aden. **A. girad** F-B, clearly falls here.

ANTENNABLENNIUS (A) AUSTRALIS Fraser-Brunner 1951 (**Pl 14, E,** Inhaca). **Blennius hyphenetes (non hypenetes** Klunz.) Norman 1922, 322. **Rhabdoblennius hypenetes** Norman 1943, 808. **A. hypenetes** Smith 1949, 348, Pl 76, f 968. D XII 17-18. A II 17-18. P 14. 12 small gillrakers. Depth equals head, 4½ in body. Eye 4 in head, twice I-orb. Snout blunt. No crest. Nuchal cirrus equals or exceeds pupil, nasal cirrus less than eye in females, short of mouth, in males longer, just to mouth. Mouth to below mid eye, no canines. Front D spines highest, less behind, fin well notched. Anal lower than D, last ray of D & A bound to body before Cd base. L.l. little curved, bends to mid side below 10th D spine, along mid side as row of weak pits almost to Cd base. P to or near A origin, pelvics half-way, Cd rounded to truncate. Live colour: as in Smith 1949, Pl 76, f 968 (**hypenetes non** Klunz.); preserved, as in Pl 14. From 34°S in E. Africa to Inhambane, abundant in S. Mozambique, many specimens, 20-67 mm., mainly tide pools. Fraser-Brunner 1951, 219 states of this species : "It has been illustrated . . . by J. L. B. Smith, (1949 above) but the artist overlooked the notch between the dorsals." It is, however, Fraser-Brunner who is in error, he plainly looked at the wrong illustration.

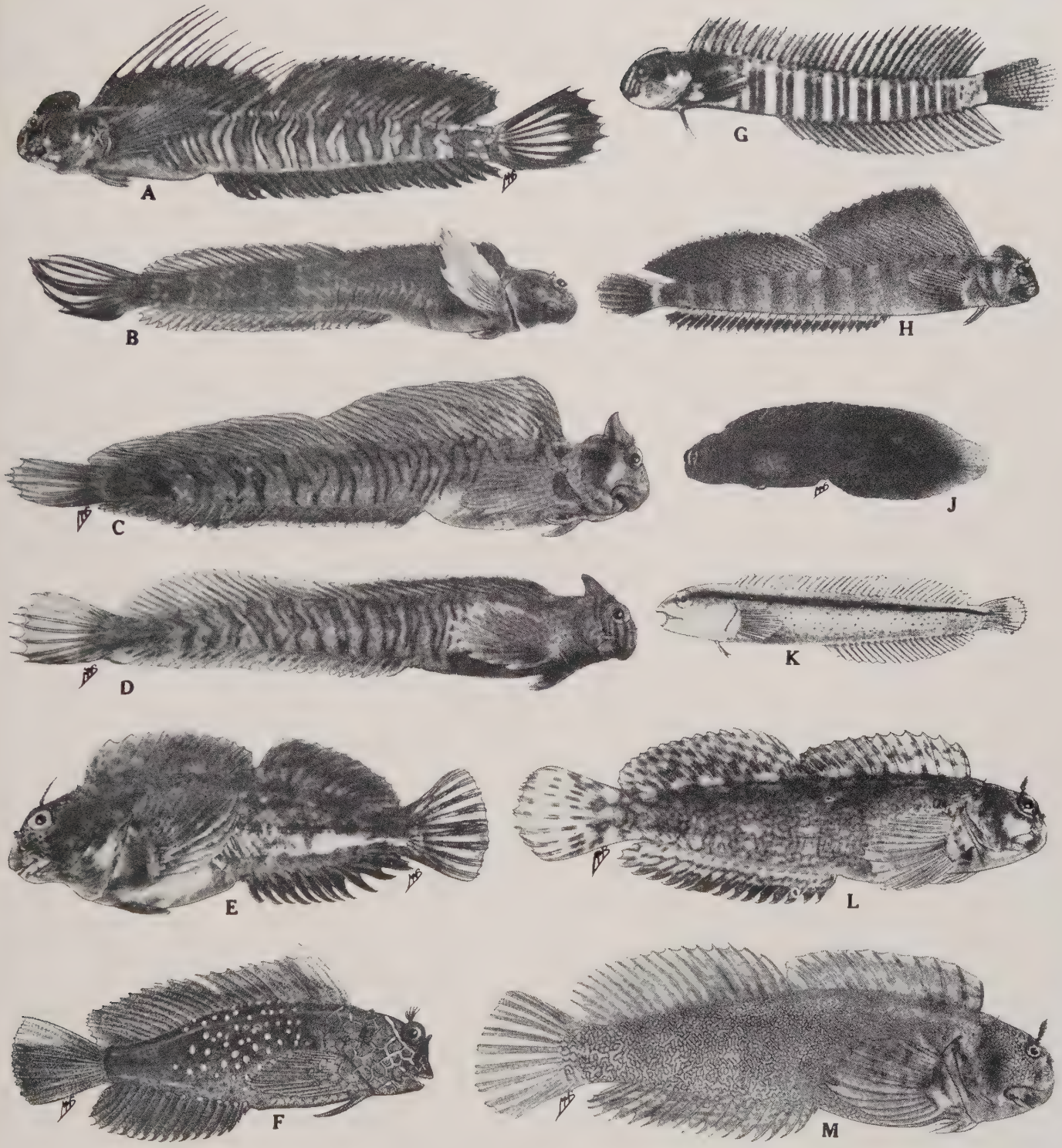

PLATE 18.

A. & B.—**Damania anjouanae** (Four.); A. male, 88 mm.; B. female, 72 mm.
C. & D.—**Lophalticus kirki** (Gnthr.); C. male, 82 mm.; D. female, 66 mm.
E.—**Pereulixia kosiensis** (Regan), fem., 124 mm. F.—**Cirripectus cruentus n. sp.**, type, 80 mm.
G.—**Omobranchus striatus** Jatzow & Lenz, after J & L. H.—**Alticus saliens** (Forst.), after Day. J.—**Enchelyurus kraussi** (Klunz.), 40 mm. K.—**Cruantus petersi** (Kossman & Rauber), after K & R. L. & M.—**Entomacrodus vermiculatus** (Val.); L. 87 mm.; M. 205 mm.

ANTENNABLENNIUS (A) VARIOPUNCTATUS (Jatzow & Lenz), 1898 (**Pl 19, K**). **Blennius variopunctatus** Jatzow & Lenz, 1898, 511, Pl 35, f 8 (Zanz.). Not seen. D XIV 18 (32). A 23. Depth 7½, head 5 in total length. Snout vertical. I-orb ⅓ eye. No D notch, front higher than hinder part, which equals body depth. P to beyond A origin. Cd rounded. Nasal cirrus to below chin. Lower canine present. In life grey, cirri and chin orange, red spots on head, elongate blue spots along side. 55-65 mm. Pools. As lower canine said to be present may be identical with **velifer n. sp.,** this cannot be settled without examination of type.

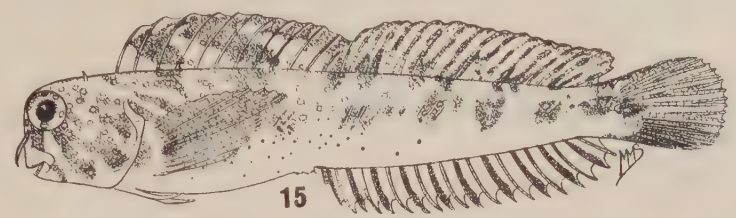

Fig. 15. **Antennablennius (L) velifer n. sp.** Fem., 48 mm., Malindi.

Antennablennius (Litanchus) velifer n. sp. (Pl 15, f 2, male, Delgado).

Blennius hypenetes (non Klunz.) Fowler 1931, 245 (Mombasa). **A. hypenetes** (part) Fraser-Brunner 1951, 216, f 3 (Red Sea). Marked sexual dimorphism. Males DXII 20-21 (type only XIII 19). A II 21-22. P 14. 12 small gillrakers. Depth equals head, 5½ in body. Eye 3 in head, 3-4 times I-orb. Snout vertical. No crest, male with age fleshy ridge behind each eye, nape concave. Nuchal cirrus less than pupil, nasal cirrus exceeds eye, apex below mouth. Maxilla to below hind part of eye, upper lip thick. Type with about 40 teeth across upper jaw, in lower 36 little larger, a small incurved canine each side behind, palate edentate. L.l. of few tubes, little curved, ends below 8-9th D spine. 1st 4 D spines longest, longer with age, diminish to last, usually hidden: males with large skinny flap on front of 1st spine, in large males tips some spines divided, soft rays lower than front spines, increase to about 12th, then less, last ray bound to accessory Cd rays. A lower than D, last ray bound to accessory Cd rays, apex last D & A beyond Cd base. P to A origin, pelvic not half-way, Cd rounded. Females differ in D XII 19-20: A II 20-21. No lower canines; lower dorsal; no skinny flap on 1st spine; last D ray bound to Cd base. Alive as Pl 15 (male); preserved, yellowish, with dark marks as in Fig. 15. Many specimens, 25-75 mm., Delgado, Zanzibar, Shimoni, Malindi, the type, male, 75 mm., Cape Delgado. Ripe eggs about 1 mm. diameter. A male, 60 mm. length, from Aden wrongly identified in Brit.Mus. by Fraser-Brunner as **hypenetes** Klunzinger, is slightly darker in colour than most of mine, but otherwise agrees exactly, it has D XII 20: A II 21: P 14: V I 3.

ANTENNABLENNIUS (LITANCHUS) ADENENSIS Fraser-Brunner, 1951. Fraser-Brunner 1951, 219, f 6. Not seen. D XII 17-18. A 19-20 (II 17-18). P 14. V I 2. Depth 5.5, head 4.5-5 in body. Eye 3.5-4.5 in head. No crest. Nuchal cirrus minute, that at nostril not to mouth. D notched. Preserved, brownish, marked as shown. To 50 mm. Aden.

Fig. 16. **Antennablennius (L) adenensis** Fraser-Brunner. After F.-B.

17. **Glyptoparus nov.**

Genotype **G. delicatulus n. sp.** Crest on nape. Small simple cirri on nape, above eye, and at nostril. Teeth little movable, about 70 above and 50 below. No canines, palate edentate, lips smooth. Mid Cd rays forked. 1st D lower than 2nd, notched. Last D & A rays joined to peduncle. Related to **Rhabdoblennius** Whitley, but has more teeth in front of jaws, and no canines. Possibly 2 species.

Glyptoparus delicatulus n. sp. (Pl 16, f 3).

D XII 16. A II 18. P 12. V I 3. 6-7 feeble rakers. Depth 5½; head 4¾ in body. Eye 3 in head, 3 times I-orb. Snout vertical, concave. Males with small crest behind eye, barely pupil height. Small simple cirri at eye, nape and nostril, latter longest, pupil length. Mouth to below hind part eye, teeth in jaws fine, movable, 75-80 upper and 50-55 lower, no canines, palate edentate. L.l. little curved, ends below 8-9 D spine. 1st D lower than 2nd, last spine short, fin notched. Soft D ⅔ body height, A lower, last D & A rays bound to body near Cd base. P not to A origin, pelvic 1.5 in head. Cd rounded, main rays divided. Alive: as Pl 16, f 3; preserved, alcohol, much as Pl 16; formalin, most marks faded, line on D2 distinct, belly dusky; dark bar across chin, and dark spot each side before pelvic base prominent. 14 specimens, 20-33 mm., Pinda, Malindi, Mahe, La Digue (Sey.), type, male, 33 mm., Malindi. Lives mainly hidden in sand. Possibly this, named as **Rhabdoblennius sp.,** 22 mm., from Gilbert Is., Pacific, by Randall 1955, 213.

GLYPTOPARUS JUGULARIS (Klunz.), 1871. **Blennius jugularis** Klunz. 1871, 493. **Rhabdoblennius jugularis** de Beaufort & Chapman, 1951, 349 (Tau, Pacif.). Not seen. D XII 18-19. A II 20-21. P 13-14. V I 3. Depth 7, head 6 : eye 2½ in head. No crest, tiny cirri at nape, eye and nostril. Forehead prominent. No data on teeth, except no canines. Small notch in D. Greenish yellow, fine black dots, curved brown crossbars or blotches. Many rows shiny silvery blue lines or spots on sides and back. Black spot on front of D, this washed black. Anal hyaline, dusky, tips white. P and pelvic light. Tail with several dark crossbars. Ocular cirrus red. Chin and breast yellow, sometimes spotted yellow and black. To 50 mm. Coral reefs, Red Sea, not uncommon. Not found in W. Ind. Ocean, one specimen reported from Tau Island, Pacific.

18. **Rhabdoblennius** Whitley, 1930.

Type **Blennius rhabdotrachelus** Fowler & Ball, 1924. No nuchal crest. Simple cirrus at eye and nostril, none at nape. Teeth little movable, 40-50 in upper jaw, lower canines distinct. D XII, little notched. V I 3. As here defined probably purely Pacific, only species from W. Indian Ocean that could fall here is **jugularis** Klunz., 1871, but that seems more properly to belong to **Glyptoparus** (above).

Records of Doubtful Validity.

1. **Salarias bilitonensis** Blkr., 1858, also as syn. **hendriksi** Blkr., 1858, several rec. from Madagascar.
2. **Salarias cervus** C & V, rec. by Sauvage 1880, 218 from Red Sea, stating D XII 14, A 17, but this name not in C & V.
3. **Salarias meleagris** (Val.), 1836. Recorded by Regan 1918, Natal; Blkr. & Pollen 1875, 74 and Sauvage 1891, 387, Madagascar. Arnoult 1958, 86, Aldabra. These records probably **striatomaculatus** Kner, **meleagris** not certainly found.
4. **Salarias oortii** Blkr., 1850. Records probably either **edentulus** Schn., or **striatomaculatus** Kner.

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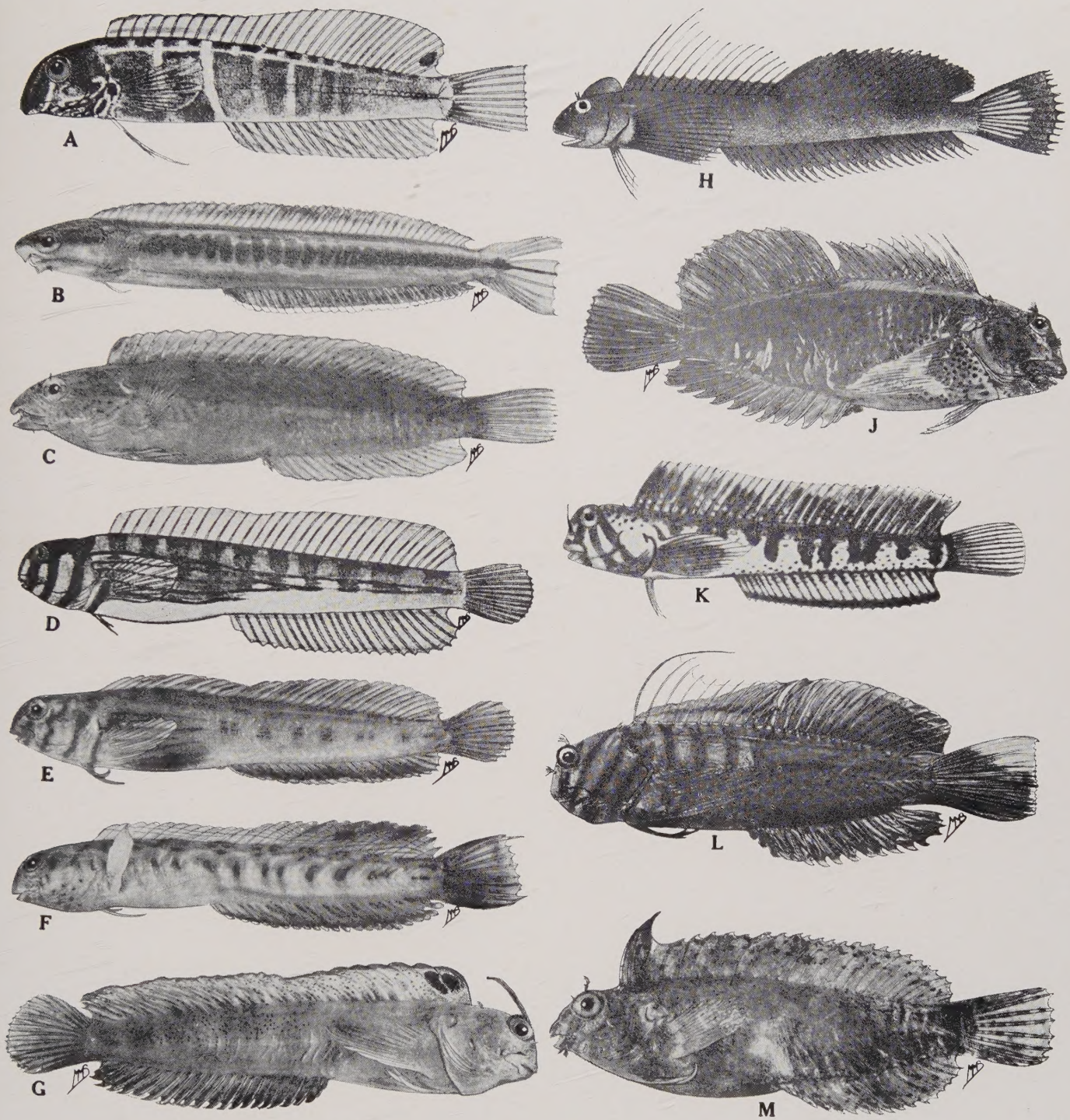

PLATE 19.

A.—**Cruantus dealmeida** (Smith), type, 54 mm. B.—**Runula tapeinosoma** (Blkr.), 62 mm. C.—**Dasson variabilis** (Cantor), 96 mm. D. & E.—**Omobranchus japonicus scalatus nov;** D. live pattern, 58 mm.; E. type, pres, 42 mm. F.—**Omobranchus elongatus** (Peters), 46 mm. G.—**Hirculops cornifer menos nov.,** male, 68 mm. H.—**Damania monochrus** (Blkr.), after Blkr. & Pollen. J.—**Cirripectus fuscoguttatus** Chap. & Schultz, 130 mm. K.—**Antennablennius (A) variopunctatus** Jatzow & Lenz, after J & L. L.—**Cirripectus variolosus** (Val.), 79 mm. M.—**Petroscirtes mitratus** Rupp., fem., 63 mm.